

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 08-314920

(43)Date of publication of application : 29.11.1996

(51)Int.Cl.

G06F 17/22

H04B 1/38

H04Q 7/32

(21)Application number : 08-012494

(71)Applicant : TOSHIBA CORP

(22)Date of filing : 29.01.1996

(72)Inventor : SHIICHI KAZUHIRO

INOUE NOBUHIRO

NANNICHI TOSHIHIKO

IWAKI MINORU

NOSE TOSHIRO

SASAKI MASANARI

JIYON RAIRII

(30)Priority

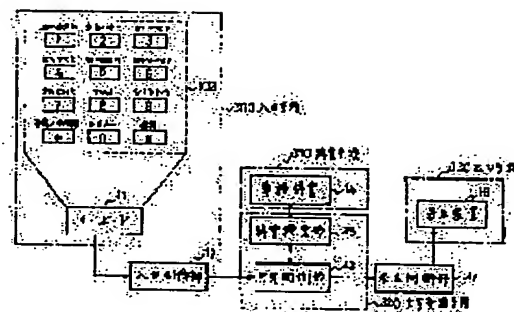
Priority number : 07 52183 Priority date : 13.03.1995 Priority country : JP

(54) CHARACTER INPUT DEVICE

(57)Abstract:

PURPOSE: To input a necessary message without the need of a conversion table and without a large number of key operations.

CONSTITUTION: A dictionary means 310, plural ten keys to which plural KANA (Japanese syllabary) are allocated, a conversion/next candidate key '*', a decision key '#', an output means 330 which displays/outputs the candidate character or the candidate character string of a conversion result and a character conversion means 320 retrieving the dictionary means 310 on the character string corresponding to the inputted key, obtaining the candidate character or the candidate character string and transmitting it to the output means 330 are provided. The inputted characters or the inputted character strings including meaningless characters or character strings become the allocation number of pieces (M)-th of the number of operation keys (N), that is, (=NM). They are character-converted referring to the dictionary means 310 by the operation of conversion/next candidate key.



LEGAL STATUS

[Date of request for examination] 09.02.2000

[Date of sending the examiner's decision of rejection] 17.10.2000

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number] 3422886

[Date of registration]	25.04.2003
[Number of appeal against examiner's decision of rejection]	2000-18208
[Date of requesting appeal against examiner's decision of rejection]	16.11.2000
[Date of extinction of right]	

* NOTICES *

JPO and NCIPJ are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

CLAIMS

[Claim(s)]

[Claim 1] A dictionary means by which the input-statement character, the candidate alphabetic character of an input string and a conversion result, or the candidate character string was matched and memorized, Two or more keys to which two or more alphabetic characters were assigned, and the conversion / next candidate key for directing a transliteration, The input means for inputting an alphabetic character or a character string including the definite key for making a conversion result decide, The output means for displaying the candidate alphabetic character or candidate character string of a conversion result at least, and outputting it, The alphabetic character input unit characterized by providing a transliteration means to search said dictionary means, to ask for a candidate alphabetic character or a candidate character string, and to send out this candidate alphabetic character or a candidate character string to said output means about the alphabetic character inputted from said input means, or the inputted character string.

[Claim 2] A dictionary means by which the input figure, the candidate alphabetic character of an input digit string and a conversion result, or the candidate character string was matched and memorized, The ten key with which two or more alphabetic characters were assigned, and the conversion / next candidate key for directing a transliteration, The input means for inputting an alphabetic character or a character string including the definite key for making a conversion result decide, The output means for displaying the candidate alphabetic character or candidate character string of a conversion result at least, and outputting it, The alphabetic character input unit characterized by providing a transliteration means to search said dictionary means, to ask for a candidate alphabetic character or a candidate character string, and to send out this candidate alphabetic character or a candidate character string to said output means about the figure inputted from said input means, or the inputted digit string.

[Claim 3] The alphabetic character input unit according to claim 1 or 2 characterized by having the code sending-out means with which detects the code corresponding to this key, sends out to an output means, and a display is presented if the key to which the alphabetic character of an input means was assigned is operated.

[Claim 4] A transliteration means is an alphabetic character input unit according to claim 1 or 2 characterized by asking for the candidate alphabetic character or candidate character string corresponding to the figure which searched the dictionary means and was inputted, sending out this candidate alphabetic character or a candidate character string to an output means, and presenting a display, when the key to which the alphabetic character of an input means was assigned is operated.

[Claim 5] It is the alphabetic character input unit according to claim 1 or 2 characterized by for a transliteration means searching a dictionary means and asking for the candidate alphabetic character of the 1st place, or a candidate character string if the key to which the alphabetic character of an input means was assigned is operated, sending [to memorize a candidate alphabetic character or a candidate character string in predetermined order,] out this candidate alphabetic character or a candidate character string to a dictionary means to an output means, and presenting a display.

[Claim 6] When a dictionary means is searched, it asks for a candidate alphabetic character or a candidate character string and there are two or more candidate alphabetic characters or candidate character strings, a transliteration means While sending out these candidate alphabetic characters or a candidate character string to a predetermined individual [every] output means and presenting a display An alphabetic character input unit given in any 1 term of claim 1 characterized by providing a candidate selection means to choose about two or more candidate alphabetic characters or candidate character strings which were displayed on this output means thru/or claim 3.

[Claim 7] The alphabetic character input unit according to claim 6 characterized by having a location detection means for a touch panel to be prepared in the candidate alphabetic character of an output means, or the viewing area of a candidate character string, and to detect the input actuated valve position in this touch panel, and a definite means to make a conversion result decide based on correspondence relation with the display position of the detection result of this location detection means, a candidate alphabetic character, or a candidate character string.

[Claim 8] An alphabetic character input unit given in any 1 term of claim 1 characterized by having a modification means to change about an input-statement character or an input string, and to make conversion by said transliteration means perform again in processing by the transliteration means when a candidate alphabetic character or a candidate character string is not obtained thru/or claim 7.

[Claim 9] A modification means is an alphabetic character input unit according to claim 8 characterized by deleting the tail alphabetic character of an input string and changing an input string.

[Claim 10] A modification means is an alphabetic character input unit according to claim 8 characterized by having the candidate table of the key used as an operation mistake in the case of actuation of a key, and changing an input-statement character or an input string at it according to this candidate table.

[Claim 11] It is an alphabetic character input unit given in any 1 term of claim 1 which is equipped with a transmitting means transmit the fixed alphabetic character or the fixed character string, and a range information acquisition means acquire the range information on a character code that a transmitting partner terminal can be processed, and is characterized by for a transliteration means to search a dictionary means based on the range information on the transmitting partner terminal acquired by said range information acquisition means thru/or claim 10.

[Claim 12] It is an alphabetic character input unit given in any 1 term of claim 1 which is equipped with the range information table on which a transmitting means transmit the fixed alphabetic character or the fixed character string, and the identification information of a transmitting partner terminal and the range information on the character code which can be processed were matched, and is characterized by for a transliteration means to search a dictionary means based on the range information acquired from said range information table according to the identification information of a transmitting partner terminal thru/or claim 10.

[Claim 13] A dictionary means by which an input-statement character, the candidate alphabetic character of an input string and a conversion result or a candidate character string, and its attribute information were matched and memorized, Two or more keys to which two or more alphabetic characters were assigned, and the conversion / next candidate key for directing a transliteration, The input means for inputting an alphabetic character or a character string, and required information including the definite key for making a conversion result decide, The output means for displaying the candidate alphabetic character or candidate character string of a conversion result at least, and outputting it, An attribute specification means to specify the attribute of an input-statement character or an input string based on the information inputted from said input means, About the alphabetic character corresponding to the key inputted from said input means, or the inputted character string of two or more key correspondences, search said dictionary means and it faces in quest of a candidate alphabetic character or a candidate character string. The alphabetic character input unit characterized by providing a transliteration means to ask for the candidate alphabetic character or candidate character string applicable to the attribute information specified by said attribute specification means, and to send out this candidate alphabetic character or a candidate character string to said output means.

[Claim 14] It is the alphabetic character input unit according to claim 13 carry out having the contents memory of directions the contents of directions for acquiring two or more modes and attributes concerning processing were matched and remembered to be, an attribute specification means detecting the mode under processing, acquiring the contents of directions corresponding to this mode from the above-mentioned contents memory of directions, and acquiring the attribute of the alphabetic character which starts an input based on these contents of directions, or a character string as the description.

[Claim 15] A cursor display means to display the cursor which shows the alphabetic character under input, or the location of a character string on an output means on the occasion of the input of an alphabetic character or a character string, It has the cursor location memory the alphabetic character which starts an input corresponding to the location of this cursor, or the attribute information on a character string was matched and remembered to be. An attribute specification means The alphabetic character input unit according to claim 13 or 14 characterized by acquiring the attribute of the alphabetic character concerning an input, or a character string from the display position of the cursor by

the above-mentioned cursor display means, and the contents of the above-mentioned cursor location memory.

[Claim 16] An attribute specification means is an alphabetic character input unit given in claim 13 characterized by acquiring the attribute of the alphabetic character concerning an input, or a character string according to the alphabetic character concerning the subsequent input inputted from an input means, or the contents of directions of the attribute of a character string thru/or any 1 term of 15.

[Claim 17] The input means for having two or more keys to which 1 or or more 2 alphabetic character was assigned, and inputting a character code, A beginning-of-a-sentence distinction means to distinguish the alphabetic character of a beginning of a sentence based on the list of the code corresponding to the key inputted from this input means, A capital letter conversion means to change and output the character code given to the character code of a capital letter, The output means for displaying the alphabetic character corresponding to the character code given at least, and outputting it, or [outputting the character code outputted to said output means according to the distinction result by the above-mentioned beginning-of-a-sentence distinction means through said capital letter conversion means] -- or the alphabetic character input unit characterized by whether to output as it is and providing the means for switching to switch.

[Claim 18] A dictionary means by which the input-statement character, the candidate alphabetic character of an input string and a conversion result, or the candidate character string was matched and memorized, Two or more keys to which two or more alphabetic characters were assigned, and the conversion / next candidate key for directing a transliteration, The input means for inputting an alphabetic character or a character string including the definite key for making a conversion result decide, A transliteration means to search said dictionary means, to ask for a candidate alphabetic character or a candidate character string, and to send out this candidate alphabetic character or a candidate character string about the alphabetic character corresponding to the key inputted from said input means, or the inputted character string of two or more key correspondences, A beginning-of-a-sentence distinction means to distinguish the alphabetic character of a beginning of a sentence based on the list of the code corresponding to the key inputted from said input means, and the code of the conversion result by said transliteration means, A capital letter conversion means to change and output the character code given to the character code of a capital letter, The output means for displaying the alphabetic character corresponding to the character code given at least, and outputting it, or [outputting the character code outputted to said output means according to the distinction result by the above-mentioned beginning-of-a-sentence distinction means through said capital letter conversion means] -- or the alphabetic character input unit characterized by whether to output as it is and providing the means for switching to switch.

[Claim 19] A beginning-of-a-sentence distinction means is an alphabetic character input unit according to claim 17 characterized by judging that the alphabetic character concerned is an initial character when 1 or two or more space codes are before the alphabetic character concerned, or there is a line feed code and a period code is before that.

[Claim 20] An alphabetic character input unit given in claim 1 characterized by assigning the kana alphabetic character to two or more keys of an input means thru/or any 1 term of 18.

[Claim 21] An alphabetic character input unit given in claim 1 characterized by assigning the alpha character to two or more keys of an input means thru/or any 1 term of 18.

[Claim 22] The portable wireless telephone characterized by equipping claim 1 thru/or any 1 term of 21 with the alphabetic character input unit of a publication.

[Translation done.]

* NOTICES *

JPO and NCIP are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] Especially this invention relates about an alphabetic character input unit to the equipment which has a limit in the number of keys, for example, the suitable alphabetic character input unit for a Personal Digital Assistant.

[0002]

[Description of the Prior Art] Various alphabetic character input units are realized by Personal Digital Assistants, such as the former, for example, a portable wireless telephone etc. First, as shown in drawing 77, the thing using the ten key (dialing key) 203 which applies caudad from the surface center section of the hand set 201 of a portable wireless telephone, and is arranged at four-line three trains is known. The following two kinds are known as the input technique.

[0003] A matrix character-array table as shown in drawing 78 is used for the 1st technique. That is, the pair of a figure and one character (notation) are matched and memorized. And with reference to the above-mentioned table, one character (notation) can be inputted by inputting the pair of the figure corresponding to the matrix of a desired alphabetic character (notation). for example, -- "-- ** -- as shown in drawing 79, "4513228513" and a ten key are operated to obtain an input with method of float (Tokyo)." the display 202 of the portable wireless telephone shown in drawing 77 by this -- the pair of a figure -- corresponding -- "-- ** -- method of float" is displayed.

[0004] The 2nd technique matches and memorizes numeric code and a fixed form sentence, and inputs the code corresponding to a desired fixed form sentence by actuation of a ten key 203 with reference to the code table of a fixed form sentence. For example, the character code train of a fixed form sentence presupposes that it memorizes corresponding to the code of double figures like drawing 80. In this case, if you want to input "telephone a firm", "01" will be inputted by actuation of a ten key 203. Thereby, corresponding to the inputted code, "please telephone a firm" is displayed on the display 202 of the portable wireless telephone of drawing 77.

[0005]

[Problem(s) to be Solved by the Invention] However, according to the above-mentioned alphabetic character input unit, when there was no conversion table fundamentally, it could not key, but there was a trouble of being inconvenient. On the other hand, the portable wireless telephone which assigned each of a ten key 203 two or more kana alphabetic characters as shown in drawing 81 is known. In this equipment, the count and alphabetic character of actuation in each key are matched and memorized. If the corresponding alphabetic character at the left end of declared is inputted and the number of actuation increases 1 time below when the count of actuation is 1 in each key, the alphabetic character shifted rightward [declared] every [1] will be inputted. for example, -- "-- ** -- as shown in drawing 82, "444411122888111" and a ten key 203 are operated to obtain an input with method of float (Tokyo)." thereby -- the display 202 of the portable wireless telephone of drawing 77 -- the count of actuation of a key -- corresponding -- "-- ** -- method of float" will be displayed.

[0006] According to this alphabetic character input unit, although it became unnecessary [a conversion table] as mentioned above, the number of key strokes increased extremely and there was a trouble of causing an incorrect input accidentally [count / of the count of actuation] depending on the case. Moreover, although putting a figure in order by the word play and inputting was also performed in the selective-calling receiver etc., it is a premise to know the message concerning the digit string and the contents of the word play, and, generally there was a trouble of being user-unfriendly. Moreover, in a word play, there was also a message which cannot be expressed and there was also a problem that it

could be hard to convey an intention to a partner exactly.

[0007] This invention was made in view of the trouble of the above conventional alphabetic character input units, the purpose has an unnecessary conversion table, and, moreover, it is offering the alphabetic character input unit which can input a required message etc., without the number of key strokes increasing.

[0008]

[Means for Solving the Problem] A dictionary means by which the input-statement character, the candidate alphabetic character of an input string and a conversion result, or the candidate character string was matched, and the alphabetic character input unit of this invention according to claim 1 was memorized, Two or more keys to which two or more alphabetic characters were assigned, and the conversion / next candidate key for directing a transliteration, The input means for inputting an alphabetic character or a character string including the definite key for making a conversion result decide, The output means for displaying the candidate alphabetic character or candidate character string of a conversion result at least, and outputting it, It is characterized by providing a transliteration means to search said dictionary means, to ask for a candidate alphabetic character or a candidate character string, and to send out this candidate alphabetic character or a candidate character string to said output means about the alphabetic character corresponding to the key inputted from said input means, or the inputted character string of two or more key correspondences. When the key to which two or more alphabetic characters were assigned is operated as a result of being constituted as above, and conversion / next candidate key is operated, about the alphabetic character corresponding to the inputted key, or the inputted character string of two or more key correspondences, a dictionary means will be searched, it will ask for a candidate alphabetic character or a candidate character string, and this candidate alphabetic character or a candidate character string will be sent out to an output means.

[0009] A dictionary means by which the input figure, the candidate alphabetic character of an input digit string and a conversion result, or the candidate character string was matched, and the alphabetic character input unit of this invention according to claim 2 was memorized, The ten key with which two or more alphabetic characters were assigned, and the conversion / next candidate key for directing a transliteration, The input means for inputting an alphabetic character or a character string including the definite key for making a conversion result decide, The output means for displaying the candidate alphabetic character or candidate character string of a conversion result at least, and outputting it, It is characterized by providing a transliteration means to search said dictionary means, to ask for a candidate alphabetic character or a candidate character string, and to send out this candidate alphabetic character or a candidate character string to said output means about the figure corresponding to the ten key inputted from said input means, or the inputted digit string of two or more key correspondences. When the ten key with which two or more alphabetic characters were assigned is operated as a result of being constituted as above, and conversion / next candidate key is operated, about the alphabetic character corresponding to the inputted ten key, or the inputted character string of two or more ten key correspondences, a dictionary means will be searched, it will ask for a candidate alphabetic character or a candidate character string, and this candidate alphabetic character or a candidate character string will be sent out to an output means.

[0010] The alphabetic character input unit of this invention according to claim 3 will be characterized by having the code sending-out means with which detects the code corresponding to this key, sends out to an output means, and a display is presented, if the key to which the alphabetic character of an input means was assigned is operated. If the key to which the alphabetic character was assigned is operated as a result of being constituted as above, the code corresponding to this key will be detected and character representation corresponding to the key which sent out to the output means and was operated will be performed. That is, the figure and the alphabet corresponding to a key which were operated are displayed.

[0011] In the alphabetic character input unit of this invention according to claim 4, it is characterized by searching a dictionary means, asking for a candidate alphabetic character or a candidate character string, sending out this candidate alphabetic character or a candidate character string to an output means, and presenting a display, if the key to which the alphabetic character of an input means was assigned for the transliteration means is operated. If the key to which the alphabetic character was assigned is operated as a result of being constituted as above, a dictionary means will be searched, it will ask for a candidate alphabetic character or a candidate character string, and the display of this candidate alphabetic character or a candidate character string will be made.

[0012] In the alphabetic character input unit of this invention according to claim 5, it is characterized by

for a transliteration means searching a dictionary means and asking for the candidate alphabetic character of the 1st place, or a candidate character string, if the key to which the alphabetic character of an input means was assigned is operated, sending [for a candidate alphabetic character or a candidate character string to be memorized by the dictionary means in predetermined order, and] out this candidate alphabetic character or a candidate character string to an output means, and presenting a display. If the key to which the alphabetic character of an input means was assigned is operated as a result of being constituted as above, a dictionary means will be searched, it will ask for the candidate alphabetic character of the 1st place, or a candidate character string, and the display of this candidate alphabetic character or a candidate character string will be made.

[0013] In the alphabetic character input unit of this invention according to claim 6 When a transliteration means searches a dictionary means, and asks for a candidate alphabetic character or a candidate character string and there are two or more candidate alphabetic characters or candidate character strings While sending out these candidate alphabetic characters or a candidate character string to a predetermined individual [every] output means and presenting a display, it is characterized by a candidate selection means to choose about two or more candidate alphabetic characters or candidate character strings which were displayed on this output means possessing. As a result of being constituted as above, when there are two or more candidate alphabetic characters or candidate character strings, it is displayed a predetermined individual every and these candidate alphabetic characters or a candidate character string can be chosen about two or more of these candidate alphabetic characters or candidate character strings that were displayed.

[0014] It is characterized by equipping the alphabetic character input device of this invention according to claim 7 with a location detection means for a touch panel to be prepared in the candidate alphabetic character of an output means, or the viewing area of a candidate character string, and to detect the input actuated valve position in this touch panel, and a definite means to make a conversion result decide based on correspondence relation with the display position of the detection result of this location detection means, a candidate alphabetic character, or a candidate character string. As a result of being constituted as above, the input actuated valve position in the touch panel of the viewing area of a candidate alphabetic character or a candidate character string will be detected, and a conversion result will be decided based on correspondence relation with the display position of this detection result, a candidate alphabetic character, or a candidate character string.

[0015] In the alphabetic character input unit of this invention according to claim 8, in processing by the transliteration means, when a candidate alphabetic character or a candidate character string is not obtained, it changes about an input-statement character or an input string, and is characterized by having a modification means to make conversion by said transliteration means perform again. As a result of being constituted as above, when a candidate alphabetic character or a candidate character string is not obtained, it changes about an input-statement character or an input string, and conversion is performed again.

[0016] In the alphabetic character input unit of this invention according to claim 9, a modification means is characterized by deleting the tail alphabetic character of an input string and changing an input string. As a result of being constituted as above, when a candidate alphabetic character or a candidate character string is not obtained, the tail alphabetic character of an input string is deleted, and it changes about an input-statement character or an input string, and conversion is performed again.

[0017] In the alphabetic character input device of this invention according to claim 10, the modification means is equipped with the candidate table of the key used as an operation mistake in the case of actuation of a key, and it is characterized by changing an input-statement character or an input string according to this candidate table. As a result of being constituted as above, when a candidate alphabetic character or a candidate character string is not obtained, in the case of actuation of a key, according to the candidate table of the key used as an operation mistake, it changes about an input-statement character or an input string, and conversion is performed again.

[0018] The alphabetic character input unit of this invention according to claim 11 is equipped with a transmitting means to transmit the fixed alphabetic character or the fixed character string, and a range information acquisition means to acquire the range information on a character code that a transmitting partner terminal can be processed, and is characterized by searching a dictionary means based on the range information on a transmitting partner terminal that the transliteration means was acquired by said range information acquisition means. As a result of being constituted as above, the range information on a character code that a transmitting partner terminal can be processed is acquired, and retrieval of a dictionary means is performed based on this.

[0019] The alphabetic character input unit of this invention according to claim 12 is equipped with the range information table on which a transmitting means transmit the fixed alphabetic character or the fixed character string, and the identification information of a transmitting partner terminal and the range information on the character code which can be processed were matched, and is characterized by to search a dictionary means based on the range information for which a transliteration means is acquired from said range information table according to the identification information of a transmitting partner terminal. As a result of being constituted as above, from the range information table on which the identification information of a transmitting partner terminal and the range information on the character code which can be processed were matched, the range information on a character code that a transmitting partner terminal can be processed is acquired, and retrieval of a dictionary means is performed based on this.

[0020] The alphabetic character input unit of this invention according to claim 13 A dictionary means by which an input-statement character, the candidate alphabetic character of an input string and a conversion result or a candidate character string, and its attribute information were matched and memorized, Two or more keys to which two or more alphabetic characters were assigned, and the conversion / next candidate key for directing a transliteration, The input means for inputting an alphabetic character or a character string, and required information including the definite key for making a conversion result decide, The output means for displaying the candidate alphabetic character or candidate character string of a conversion result at least, and outputting it, An attribute specification means to specify the attribute of an input-statement character or an input string based on the information inputted from said input means, About the alphabetic character corresponding to the key inputted from said input means, or the inputted character string of two or more key correspondences, search said dictionary means and it faces in quest of a candidate alphabetic character or a candidate character string. It asks for the candidate alphabetic character or candidate character string applicable to the attribute information specified by said attribute specification means, and is characterized by providing a transliteration means to send out this candidate alphabetic character or a candidate character string to said output means. As a result of being constituted as above, only a candidate alphabetic character with the specified attribute and an attribute in agreement or a candidate character string will be displayed with an output means.

[0021] It carries out the alphabetic character input unit of this invention according to claim 14 being equipped with the contents memory of directions the contents of directions for acquiring two or more modes and attributes concerning processing were matched and remembered to be, and an attribute specification means detecting the mode under processing, acquiring the contents of directions corresponding to this mode from the above-mentioned contents memory of directions, and acquiring the attribute of the alphabetic character which starts an input based on these contents of directions, or a character string as the description. Since it is constituted as above, only the candidate alphabetic character in which the attribute of the alphabetic character which starts an input with the mode under processing, or a character string is specified, and has the specified attribute and an attribute in agreement, or a candidate character string will be displayed with an output means.

[0022] The alphabetic character input unit of this invention according to claim 15 A cursor display means to display the cursor which shows the alphabetic character under input, or the location of a character string on an output means on the occasion of the input of an alphabetic character or a character string, It has the cursor location memory the alphabetic character which starts an input corresponding to the location of this cursor, or the attribute information on a character string was matched and remembered to be. An attribute specification means It is characterized by acquiring the attribute of the alphabetic character concerning an input, or a character string from the display position of the cursor by the above-mentioned cursor display means, and the contents of the above-mentioned cursor location memory. Since it is constituted as above, only the candidate alphabetic character in which the attribute of the alphabetic character concerning an input or a character string is specified from the display position of cursor, and has the specified attribute and an attribute in agreement, or a candidate character string will be displayed with an output means.

[0023] In the alphabetic character input unit of this invention according to claim 16, an attribute specification means is characterized by acquiring the attribute of the alphabetic character concerning an input, or a character string according to the alphabetic character concerning the subsequent input inputted from an input means, or the contents of directions of the attribute of a character string. Since it is constituted as above, only the candidate alphabetic character in which the attribute of the alphabetic character concerning a subsequent input or a character string is specified by attribute

directions of an operator, and has the specified attribute and an attribute in agreement with them, or a candidate character string will be displayed with an output means.

[0024] The alphabetic character input unit of this invention according to claim 17 The input means for having two or more keys to which 1 or or more 2 alphabetic character was assigned, and inputting a character code, A beginning-of-a-sentence distinction means to distinguish the alphabetic character of a beginning of a sentence based on the list of the code corresponding to the key inputted from this input means, A capital letter conversion means to change and output the character code given to the character code of a capital letter, The output means for displaying the alphabetic character corresponding to the character code given at least, and outputting it, or [outputting the character code outputted to said output means according to the distinction result by the above-mentioned beginning-of-a-sentence distinction means through said capital letter conversion means] -- or it is characterized by whether to output as it is and providing the means for switching to switch. Since it is constituted as above, the beginning of a sentence of the inputted sentence is detected automatically, and the alphabetic character of this beginning of a sentence will be automatically made into a capital letter, and will be outputted.

[0025] The alphabetic character input unit of this invention according to claim 18 A dictionary means by which the input-statement character, the candidate alphabetic character of an input string and a conversion result, or the candidate character string was matched and memorized, Two or more keys to which two or more alphabetic characters were assigned, and the conversion / next candidate key for directing a transliteration, The input means for inputting an alphabetic character or a character string including the definite key for making a conversion result decide, A transliteration means to search said dictionary means, to ask for a candidate alphabetic character or a candidate character string, and to send out this candidate alphabetic character or a candidate character string about the alphabetic character corresponding to the key inputted from said input means, or the inputted character string of two or more key correspondences, A beginning-of-a-sentence distinction means to distinguish the alphabetic character of a beginning of a sentence based on the list of the code corresponding to the key inputted from said input means, and the code of the conversion result by said transliteration means, A capital letter conversion means to change and output the character code given to the character code of a capital letter, The output means for displaying the alphabetic character corresponding to the character code given at least, and outputting it, or [outputting the character code outputted to said output means according to the distinction result by the above-mentioned beginning-of-a-sentence distinction means through said capital letter conversion means] -- or it is characterized by whether to output as it is and providing the means for switching to switch. Since it is constituted as above, if the key to which two or more alphabetic characters were assigned is operated and conversion / next candidate key is operated When a dictionary means is searched and it can ask for a candidate alphabetic character or a candidate character string about the alphabetic character corresponding to the inputted key, or the inputted character string of two or more key correspondences The beginning of a sentence of the sentence by this candidate alphabetic character or the candidate character string is detected automatically, and the alphabetic character of this beginning of a sentence will be automatically made into a capital letter, and will be outputted.

[0026] When 1 or two or more space codes have a beginning-of-a-sentence distinction means before the alphabetic character concerned, or there is a line feed code and a period code is before that with the alphabetic character input unit of this invention according to claim 19, it is characterized by judging that the alphabetic character concerned is an initial character. By this, the input of a period is made, the alphabetic character of the beginning after line feed or the input of a period is made, and the alphabetic character of the beginning after 1 or two or more tooth-space inputs will be made into a capital letter, and will be outputted.

[0027] In the alphabetic character input unit of this invention according to claim 20, it is characterized by assigning the kana alphabetic character to two or more keys of an input means. Since it is constituted as above, the alphabetic character input unit concerning a Japanese input is constituted.

[0028] In the alphabetic character input device of this invention according to claim 21, it is characterized by assigning the alpha character to two or more keys of an input means. Since it is constituted as above, the alphabetic character input unit concerning an alphabet input is constituted.

[0029] The portable wireless telephone of this invention according to claim 22 equips claim 1 thru/or any 1 term of 21 with the alphabetic character input unit of a publication. By this, an alphabetic character input will be attained in a portable wireless telephone, and are recording of a text and messaging with a partner can be performed using a portable wireless telephone.

[0030]

[Embodiment of the Invention] The alphabetic character input unit applied to the gestalt of operation of this invention with reference to an accompanying drawing below is explained. The explanation which gives the same sign to the same component and overlaps in each description of drawing is omitted. The front view of the portable wireless telephone with which the alphabetic character input unit concerning the gestalt of operation of this invention was applied to drawing 1 is shown. If a hand set 101 consists of a case of the shape of a little flat rectangular parallelepiped and it applies to the lower part from the center of a front face, the ten key (dialing key) 103 which consists of a key of four-line three trains is formed, and the display 102 for displaying information, such as an alphabetic character and a notation, is formed in the upper part. Moreover, receiver section 104A for hearing the voice sent is prepared above the display 102, and transmission section 105A for inputting voice is further prepared in the lower part location of a ten key 103.

[0031] The internal configuration of the above-mentioned portable wireless telephone is shown in drawing 2. The portable wireless telephone consists of speaking circuits 4 which send and receive a sound signal between this transceiver section 3, and an earphone 104 and a telephone transmitter 105. [the controller 1 which controls each part, the input section 2 for inputting information, the antenna 5 which performs transmission and reception of an electric wave, the transceiver section 3 which are connected to this antenna 5, and transmit and receive a signal, and] An earphone 104 and a telephone transmitter 105 correspond to receiver section 104A of drawing 1, and transmission section 105A, respectively. The controller 1 consists of a message control section 6 for performing control about a message, and the character input/output section 7 which performs character input/output processing based on the input from the input section 2. The message control section 6 controls arrival-of-the-mail control according to the terminating signal which comes through the dispatch control and the antenna 5 according to an input, and the transceiver section 3 from the input section 2, adjustment of the amplification degree to a speaking circuit 4, etc. Moreover, the message control section 6 has the function which sends out the data made transmit through the transceiver section 3 the data sent from the character input/output section 7 and received to the character input/output section 7. The mode change-over switch which switches the mode of operation as telephone and the actuation as an alphabetic character input device is formed in the input section 2. A hook switch is sufficient as this mode change-over switch, and when using a hook switch, it serves as a mode of operation as an alphabetic character input unit at the time of on hook.

[0032] The block diagram when the portable wireless telephone of drawing 1 becomes a mode of operation as an alphabetic character input unit is shown in drawing 3. This configuration is a part which consists of the input section 2 and the character input/output section 7 in drawing 2. The keyboard 11 for an alphabetic character input device to input an alphabetic character etc. and the input-control section 12 which incorporates the information on the key stroke in a keyboard 11, and is sent out to the CC section 13, The word dictionary 14 which is a dictionary means 310 by which the CC section 13 which carries out generalization control of each part of an alphabetic character input unit, and an input-statement character, the candidate alphabetic character of an input string and a conversion result or a candidate character string was matched and memorized, The dictionary retrieval section 15 which obtains the candidate alphabetic character or candidate character string which corresponds with reference to the word dictionary 14 about the input-statement character or input string given from the CC section 13, The display 16 which consists of LCD as which information, such as an alphabetic character, is displayed, and the display and control section 17 which performs control for making a display 16 display a candidate alphabetic character or a candidate character string on the bottom of control of the CC section 13 are provided. Two or more kana alphabetic characters are assigned to several character each key of the ten key 103 of a keyboard 11 every. that is, five characters of the "*" line of the Japanese kana syllabary assign the "1" key of the numerical keypad of arrangement of the usual dialing key -- having -- the "2" keys -- the Japanese kana syllabary -- " -- it is -- five characters of " line are assigned and the kana alphabetic character is assigned by the "0" keys like the following. "8 [however,]" key -- "*" and "*" -- " -- " is assigned and "*", "*", "*", and "-" are assigned to the "0" keys. Moreover, the "*" key is used as conversion / next candidate key, and let the "#" key be a definite key. Two or more keys to which, as for the keyboard 11, two or more kana alphabetic characters were assigned in the above, It is the input means 300 for inputting an alphabetic character or a character string including the conversion / next candidate key for directing a transliteration, and the definite key for making a conversion result decide. A display 16 It is the output means 330 for displaying the candidate alphabetic character or candidate character string of a

conversion result at least, and outputting it. The CC section 13 and the dictionary retrieval section 15 About the alphabetic character corresponding to the key inputted from the input means 300, or the inputted character string of two or more key correspondences The above-mentioned dictionary means 310 is searched, it asks for a candidate alphabetic character or a candidate character string, and a transliteration means 320 to send out this candidate alphabetic character or a candidate character string to the above-mentioned output means 330 is constituted.

[0033] The configuration of the above-mentioned keyboard 11 is shown in drawing 4 . The key matrix 10 is established corresponding to each key of a ten key 103, the electrical potential difference of 5V is always given to one contact of each switch of the key matrix 10 through a pull-up resistor and direction Rhine Out0-Out3 of a low (row), and the endpoint in direction Rhine Out0-Out3 of a low has resulted to the input-control section 12. Moreover, direction Rhine M0-M2 of a column (column) was connected to the contact of another side of each switch of the key matrix 10, and the endpoint in direction Rhine M0-M2 of a column has resulted to the input-control section 12.

[0034] On the other hand, the input-control section 12 is constituted as shown in drawing 5 . the control section 20 and timer 21 with which the input-control section 12 controls the whole, the memory table 22, and memory (MEM2) -- 23 and memory (MEM1) -- it is constituted by 24 and latches 25 and 26. Latch 25 is a circuit which latches the drive signal over direction Rhine M0-M2 of a column sent out from a control section 20, and is a circuit which latch 26 incorporates the signal of direction Rhine Out0-Out3 of a low, and is latched. The timer 21 is formed that the chattering generated at the time of a key stroke should be removed, and in order to read a key stroke into a duplex, it notifies predetermined time spacing (1mS) to a control section 20. The drive signal outputted to the latch 25 is set to memory 23, and the detecting signal then held at the latch 26 is set to memory 24. It seems that data for the memory table 22 to specify the operated key are stored, and the contents are shown in drawing 6 . That is, three patterns with which the data set to memory 23 make one set M2-M0 of bottom of MEM2 3 column at each time of the set value "0" of MEM2 of drawing 6 , "1", and "2" correspond, respectively, and being set to latch 25 is shown. Therefore, if either of three patterns on a par with the longitudinal direction which makes one set M2-M0 of bottom of MEM2 3 column is set to latch 25 Corresponding to this, one of the figures of the set value "0" in MEM2 of drawing 6 , "1", and "2" is set to memory 23, and this is received. For latch 26 Either of four patterns which make one set Out3-Out1 on a par with the longitudinal direction of right 4 column of MEM1 of drawing 6 is set, and this value is set to memory 24. For this reason, the figure of the key by which the figure of the location of the intersection of the set value "0" of MEM2, "1" or, and "2" was operated will be shown. [either of four patterns on a par with the longitudinal direction of MEM1 of drawing 6 R> 6 and] For example, if "1" is set to memory 23 and "1011" is set to memory 24, the code which shows the "5" keys will be outputted from the memory table 22. At this time, latch 25 is shown that "101 (M2-M0=)" was set.

[0035] Since a control section 20 performs key reading by the program of the flow chart shown in drawing 7 , actuation of a control section 20 is explained according to this flow chart. First, latch 25 is made to latch a signal that "0" should be outputted to all direction Rhine M0-M2 of a column (S1), and it supervises that "0" appears in either of direction Rhine Out0-Out3 of a low based on the signal latched to latch 26 (S2). If "0" appears, with reference to a timer 21, the signal of the waiting for 1mS (S3) and direction Rhine Out0-Out3 of a low will be incorporated from latch 26, and it will set to memory 24 (S4). Furthermore, with reference to a timer 21, the signal of the waiting for 1mS (S5) and direction Rhine Out0-Out3 of a low is incorporated from latch 26, and it detects whether it is equal to the contents already set to memory 24 (S6). It is here, and when not equal, it returns to step S2 again, and actuation is continued. On the other hand, when the 1st time and the 2nd reading result are equal While making latch 25 latch a signal "110 (=M2M1M0)" that "0" should be outputted only to direction Rhine M0 of a column "0" is set to memory 23 (S7), and it detects whether "0" is in either of the signals of direction Rhine Out0-Out3 of a low latched to latch 26 (S8). That is, if either of four keys connected to direction Rhine M0 of a column of drawing 4 is operated when "0" is outputted only to direction Rhine M0 of a column, "0" will appear in either of the signals of direction Rhine Out0-Out3 of a low. Here, if there is "no 0" in all of the signal of direction Rhine Out0-Out3 of a low, while making latch 25 latch a signal "101" that "0" should be outputted only to direction Rhine M1 of a column, it detects whether "0" is in either of the signals of direction Rhine Out0-Out3 of a low which sets "1" to memory 23 and is latched to (S9) and latch 26 (S10). That is, if either of four keys connected to direction Rhine M1 of a column of drawing 4 is operated when "0" is outputted only to direction Rhine M1 of a column, "0" will appear in either of the signals of direction Rhine Out0-Out3 of a low. Furthermore, if there is "no 0" in all of the signal of direction Rhine Out0-Out3 of a low, while making latch 25 latch a signal "011" here

that "0" should be outputted only to direction Rhine M2 of a column "2" is set to memory 23 (S11), and it detects whether "0" is in either of the signals of direction Rhine Out0-Out3 of a low latched to latch 26 (S12). That is, if either of four keys connected to direction Rhine M2 of a column of drawing 4 is operated when "0" is outputted only to direction Rhine M2 of a column, "0" will appear in either of the signals of direction Rhine Out0-Out3 of a low.

[0036] If "0" does not appear as a result of the above processing, without neither of the cases requiring the signal of direction Rhine Out0-Out3 of a low If it returns to step S1, actuation is continued and "0" appears at either of the signals of direction Rhine Out0-Out3 of a low in one case of the above-mentioned steps S8, S10, and S12 The signal of direction Rhine Out0-Out3 of a low is incorporated from latch 26, and it sets to memory 24 (S13). Next, an output is directed on the memory table 22, retrieval of the memory table 22 is performed based on the signal set to these result memories 23 and 24 (S14), and a control section 20 sends out the code of the key outputted from the memory table 22 to the CC section 13. Next, latch 25 is made to latch a signal that "0" should be outputted to all direction Rhine M0-M2 of a column (S15). It detects whether all direction Rhine Out0-Out3 of a low was set to "1" (S16). (did it restore?) If it will detect whether all direction Rhine Out0-Out3 of a low was set to "1" after progress of 1mS (S17) with reference to the timer 21 after detection if oar "1" is obtained (S18), and (did it restore?) oar "1" is obtained, it will return to step S1 and actuation will be continued. The code (for example, code corresponding to a figure) which shows whether which key of a ten key 103 was operated as mentioned above is sent out to the CC section 13.

[0037] The detail configuration of the display and control section 17 of the above-mentioned alphabetic character input unit is shown in drawing 8 . The display and control section 17 consists of character location memory 34 for memorizing the alphabetic character font memory 31 the character font (character pattern) was remembered to be, the character-font expansion section 32 which develops the font of this alphabetic character font memory 31 to an image memory 33 by control of the CC section 13, the image (bit map) memory 33 which holds the image data displayed on an indicating equipment (LCD) 16 by the bit map, and display font data (character code) on display with a display position.

[0038] The location data (address) of display font data, display-position data, an expansion initiation indication signal, and the character location memory 34 are given to the above-mentioned display and control section 17 from the CC section 13. That is, with an expansion initiation indication signal, by sending display font data, the character-font expansion section 32 takes out the display font corresponding to the display font data which accessed the alphabetic character font memory 31 and was given, and stores it in the correspondence location of an image memory 33 based on display-position data (coordinate of an image memory 33). Thereby, since the data location of the image memory 33 is matched with the pixel of the screen of the LCD indicating equipment 16 by 1 to 1, the pixel data of the display font developed by the location of relevance are memorized. On the other hand, it memorizes in the location of the location data with which display font data and display-position data are sent to the character location memory 34 from the CC section 13. The CC section 13 can read this using a lead signal, can read data (display font data) on display with the display-position data, and can process transmitting to other terminals through the message control section 6, the transceiver section 3, and the antenna 5 of drawing 2 etc..

[0039] The detail configuration of the dictionary retrieval section 15 of the above-mentioned alphabetic character input unit is shown in drawing 9 . The dictionary retrieval section 15 consists of retrieval result alphabetic character output buffers 43 for holding the code of the control section 40 which carries out generalization control of this dictionary retrieval section 15 whole, the alphabetic character input buffer 41 which stores the code of the alphabetic character which it keyed, or a character string, the code pointer 42 used at the time of dictionary retrieval of the word dictionary 14, the candidate alphabetic character obtained as a result of dictionary retrieval, or a character string.

[0040] The contents memorized by the word dictionary 14 are shown in drawing 10 . That is, corresponding to the code of the figure by actuation of a ten key 103, attribute information, such as an alphabetic character with the alphabetic character in a kana or a character string, and the kanji or a character string and a part of speech, a location, and time amount, and the dictionary information which consists of information on other are matched and memorized. More specifically, the configuration of the word dictionary 14 is constituted as shown in drawing 13 from drawing 11 . First, the word dictionary 14 consists of blocks classified in the number of alphabetic characters as it is shown in drawing 11 . Each block corresponding to the number of alphabetic characters consists of two or more branches corresponding to the digit string of the number of alphabetic characters concerned as it is shown in drawing 12 . Here, two or more branches corresponding to the digit string of five characters exist in the

block whose number of alphabetic characters is five characters, the branch corresponding to the digit string in it "41281" is specified, and the predetermined number character is shown by "*" in other branches. Furthermore, the interior of the branch corresponding to a digit string "41281" is shown in drawing 13. In the branch, the table corresponding to SOS (00) which shows the head of the candidate corresponding to the table (therefore -- the case where a consecutiveness figure is with (1) and (8) -- two tables) corresponding to (9), and a digit string in case there is no consecutiveness figure is contained from the consecutiveness figure in the case of existing (0). The consecutiveness figure of correspondence, the pointer NTP of degree table, and the pointer NBP of degree branch are set to the table corresponding to (9) from the consecutiveness figure (0). On the other hand on the table corresponding to SOS (00) The code SOS which shows the head of a candidate (that is, it corresponds to a digit string "41281" in this example) in case there is no consecutiveness figure (00) The code EOB (FF) which shows termination of the code EOS (FF) which shows termination of an alphabetic character or character string code Str1 - Strn (n candidate is expressed with character code from 1 to n), and candidate alphabetic character or a candidate character string code, and a branch is set. When there are two or more candidates, the coat SOS (00) in which a candidate's head is shown is registered also among two or more candidates. When making attribute information memorize, it is each candidate's character string code Str1 - Strn, next is set with the sign which shows that it is attribute information. [0041] As mentioned above, two or more candidate alphabetic characters or candidate character strings exist in 1 branch, because two or more kana alphabetic characters were assigned [not only according to a homonym existing but] to one key like the usual Japanese word processor. for example, the case where the "1" key and the "2" keys are operated continuously -- a "*" line -- -- it is -- since it is the input of the character string of "red (dirt)", "autumn (vacancy)", "a pond (go)", "a bucket (set) etc.", etc. exist as a candidate character string. in the case of the digit string "41281" of the instantiation to drawing 13, "Tokyo (obtaining today)", "offer (**** today) etc.", etc. exist. In the above-mentioned example, the candidate of a contracted sound, the candidate of dulness, the candidate of a p-sound, etc. are transposed to Kiyone, and it has dictionary-ized so that clearly.

[0042] Since the control section 40 of the dictionary retrieval section 15 shown in drawing 9 performs retrieval processing of the word dictionary 14 by the program of the flow chart shown in drawing 14, it explains actuation of a control section 40 according to this flow chart. A control section 40 clears the alphabetic character input buffer 41 (S21), and it waits for the code (code of a numerical keypad) of an input-statement character or an input string to come (S22). an operator shows ST1 of drawing 15 in this example -- as -- -- "*" -- obtaining -- today -- -- it considers as an input-statement character. Then, an operator will operate the correspondence key of the ten key 103 of a portable wireless telephone. In the ten key 103 of this drawing 15, it differs in the ten key 103 of drawing 1, a kana alphabetic character is written by the keytop itself which has round four corners, and, moreover, the kana alphabetic character serves as katakana instead of a hiragana. Even if this character input unit is the ten key 103 of the gestalt of operation of drawing 1, and it is the ten key 103 of this drawing 15, it shows that a suitable input is possible. The numerical keypad of a ten key 103 is operated with "41281", as shown in ST2 of drawing 15. An operator shows that it inputted by asking for the kana alphabetic character enclosed with the frame among the kana alphabetic characters corresponding to "41281" of ST2.

[0043] Then, the code corresponding to the numerical keypad concerning actuation is obtained by actuation of the input-control section 12 explained in drawing 7, and the code train corresponding to the above "41281" is stored in the alphabetic character input buffer 41. Next, an operator operates the "*" key which are conversion / next candidate key in quest of conversion, as shown in ST3 of drawing 15. By actuation of the input-control section 12 explained in drawing 7 also about the this "*" key, it is changed into a code and sent out to the CC section 13. The CC section 13 which received this sends out a retrieval start signal to the control section 40 of drawing 9. Then, as shown in drawing 14, the control section (S23) 40 which was supervising whether it was a retrieval start resets the code pointer 42 (S24), and makes a data selector signal a set condition (S25). Next, a control section 40 takes out the code stored in the alphabetic character input buffer 41 from a head, and begins retrieval from the block with one alphabetic character of the word dictionary 14. Since the technique of retrieval is the same also about the figure of what position, here explains from the retrieval in the block with three alphabetic characters.

[0044] The processing from the retrieval in the block with three alphabetic characters is shown in drawing 16. According to a digit string "412", the table of the address "3F0F" of the block with three alphabetic characters is reached. The consecutiveness figure of this table is "1", and since it differs

from the 4th figure "8" of the digit string "41281" stored in the alphabetic character input buffer 41, the following table is searched based on NTP. Here, since only the candidate whose figure following a digit string "412" is "1", and the candidate who is "8" exist, the consecutiveness figure can be searching the table of "8" instantly. usually, a consecutiveness figure -- the table of "1", for the table of "2", and its degree, a consecutiveness figure is [the degree of the table of "1" / a consecutiveness figure] "3" ... as -- it carries out and a consecutiveness figure reaches the table of "8."

[0045] If a consecutiveness figure is in agreement, based on NBP of this table, the 1st table of a branch with four alphabetic characters "4128" will be reached. On the table here, a consecutiveness figure is "1" and it is in agreement with the 5th figure "1" of the digit string "41281" stored in the alphabetic character input buffer 41. If a consecutiveness figure is in agreement, the table of the following branch "41281" will be reached based on NBP of this table. Here, since there is originally no consecutiveness figure stored in the alphabetic character input buffer 41, the table on which "00" is set to the area of a consecutiveness figure is searched. In the example of this drawing 16, it is premised on that there is no candidate with the figure which follows a digit string "41281" also in the word dictionary 14, i.e., there is no table, and the table of the address "98AC" with which "00 (=SOS)" is immediately set to the area of a consecutiveness figure is reached from the table of a branch "4128."

[0046] In the example of drawing 16, "Tokyo" is set to the 1st candidate character string, and the code of "Tokyo" is read corresponding to the output value "0" of the code pointer 42. The above processing is equivalent to processing of the loop formation of steps S26, S27, and S28 from "retrieval" of step S25 in drawing 14. Also when directing and reading each candidate alphabetic character, stepping of the code pointer 42 in step 27 corresponds in the target table, while corresponding, when retrieving the table in drawing 16 sequentially. Therefore, the retrieval of a candidate alphabetic character currently performed in drawing 16 in practice is equivalent to the case where the word dictionary 14 shown in drawing 10 is being searched. In addition, although "Tokyo" was obtained in this example If the candidate alphabetic character corresponding to the inputted digit string is not memorized in the word dictionary 14 When a NEXT signal is given to the code pointer 42, stepping of the value is carried out (S27), the loop formation from step S28 to step S26 is repeated and a candidate alphabetic character or a candidate character string finally cannot be detected, in step S28, it branches to YES. That is, an END signal is returned from the code pointer 42. Then, a control section 40 sends out "he has no relevance" to the CC section 13 using retrieval result information. The CC section 13 which received "he has no relevance" displays the purport which sends out the character font of "having no relevance" to a display and control section 17, and does not have the corresponding candidate on the LCD display 16 (S29).

[0047] The code of "Tokyo" obtained as mentioned above is outputted to the retrieval result alphabetic character output buffer 43 (S30). The notice of a result output is given to the CC section 13 using retrieval result information, and the code of "Tokyo" is incorporated by the CC section 13 from the retrieval result alphabetic character output buffer 43, is further sent to a display and control section 17, it is carried out as it was explained in explanation of drawing 8, and the display in a display (LCD) 16 is presented with it. That is, "Tokyo" is displayed on a display (LCD) 16. The control section 40 of the dictionary retrieval section 15 is supervising actuation of a definite key, or actuation of a next candidate key (S31, S32). Actuation of a definite key or actuation of a next candidate key is sent out from the input-control section 12 like the case of actuation of the above-mentioned conversion key to the CC section 13.

[0048] In the example of drawing 15, since "Tokyo" is a desired alphabetic character, as shown in ST4, the definite key is operated. The CC section 13 obtains the code of a definite key, and makes a retrieval start signal change inactively. In response, the control section 40 of the dictionary retrieval section 15 branches from step 31 to YES, and makes the above-mentioned candidate alphabetic character decide. in addition, the word dictionary 14 -- "41281" -- corresponding -- a hiragana -- "-- ** -- obtaining -- today -- ", when "Tokyo" of the kanji is stored in order A next candidate key is operated to a display. it is shown to ST5 of drawing 15 by the parenthesis -- as -- first -- a hiragana -- "-- ** -- obtaining -- today -- " -- This gives a NEXT signal to the code pointer 42, stepping of the value is carried out (S27), the code of "Tokyo" of the kanji of the next candidate is obtained, and it progresses to S30 from step S26. Also in this case, since "Tokyo" of the kanji is a desired alphabetic character, as shown in ST4, a definite key is operated. Processing will be performed by subsequent processings like the above-mentioned.

[0049] Since two or more kana alphabetic characters are assigned to each key and the alphabetic character input unit applied to the gestalt of the 1st operation as above is equipped with conversion /

next candidate key, and a definite key, it can input appropriately the candidate character string which consists of combination of the kana character string assigned to the candidate alphabetic character corresponding to the kana alphabetic character assigned to the operated key, or two or more keys which were operated, and can choose it. That is, it is suitable for an information terminal with few keys. [0050] If the "*" key which are conversion / next candidate key is not operated with the gestalt of implementation of the above 1st, since any display is not made by the display 102, it does not know whether to be that the right key stroke is made, and operability is not necessarily good. So, with the gestalt of the 2nd operation, the program corresponding to the flow chart of drawing 14 with which the control section 40 of the dictionary retrieval section 15 is equipped is replaced with the program corresponding to the flow chart of drawing 17. That is, in step S22, a control section 40 waits for the code (code of a numerical keypad) of an input-statement character or an input string to come. If the numerical keypad of a ten key 103 is operated, the CC section 13 will be transmitted to the display-control section 17, as shown in step S100 of drawing 17, while it stores the code corresponding to this in the alphabetic character input buffer 41. Thus, if a ten key 103 is operated, the dictionary retrieval section 15 (control section 40) will detect the code (code of a figure) corresponding to this key, and will function as a code sending-out means with which sends out to a display and control section 17, and a display is presented. In a display and control section 17, this is patternized and the figure which writes in and corresponds to an image memory 33 is displayed. Although the control section 40 is supervising actuation of the "*" key which are conversion / next candidate key (S23), if this code corresponding to "*" key does not come, it returns to step S22 and waits for arrival of the code (code of a numerical keypad) of an input-statement character or an input string.

[0051] "-- ** -- obtaining -- today -- ", when it corresponds and keys with "41281" The actuation is [that "4", "41", ..., "41281" and the figure corresponding to the operated key increase, and is displayed as shown in drawing 18 for every actuation of each key, and the key input is received, and] infallible, that is, -- "-- ** -- obtaining -- today -- " -- it can check that the numerical keypad to which each kana alphabetic character is assigned is operated. When the "*" key which are conversion / next candidate key is operated, the transliteration using the word dictionary 14 is performed like the gestalt of the 1st operation, the code of the candidate alphabetic character which corresponds from the word dictionary 14 is read, and this is replaced with the display of the above-mentioned digit string "41281", and is displayed. in addition, the 1st candidate character string of the table corresponding to the digit string "41281" of the word dictionary 14 at the example of drawing 18 -- "-- ** -- obtaining -- today -- " -- having become a hiragana notation is shown.

[0052] The flow chart corresponding to the program with which the control section 40 of the dictionary retrieval section 15 in the alphabetic character input device concerning the gestalt of the 3rd operation equips drawing 19 is shown. Also in the gestalt of this operation, a control section 40 waits for the code (code of a numerical keypad) of an input-statement character or an input string to come in step S22. If the numerical keypad of a ten key 103 is operated, the CC section 13 will transmit the line alphabetic character corresponding to a figure to a display and control section 17, as shown in S110 of drawing 19, while storing the code corresponding to this in the alphabetic character input buffer 41. That is, the CC section 13 has the translation table of numeric code and a line alphabetic character, obtains a line alphabetic character from numeric code, and transmits it to a display and control section 17. In a display and control section 17, this is patternized and the alphabetic character which writes in and corresponds to an image memory 33 is displayed. if the above-mentioned table is explained in full detail -- the code of "1", and the code of "**" and the code of "2" -- " -- it is -- " -- a code and the code of "3" -- " -- they are the code of ", ..., the table on which the code of "0" and the code of "**" were matched.

[0053] Although the control section 40 is supervising actuation of the "*" key which are conversion / next candidate key (S23), if this code corresponding to "*" key does not come, it returns to step S22 and waits for arrival of the code (code of a numerical keypad) of an input-statement character or an input string, as shown in drawing 19. the case of the gestalt of the 1st operation -- the same -- "-- ** -- obtaining -- today -- ", when it corresponds and keys with "41281" As shown in drawing 20, for every actuation of each key "**", "****", ..., "***** and **", the line alphabetic character corresponding to the operated key increasing, and being displayed, and the key input being received and its actuation are infallible -- things -- that is, -- "-- ** -- obtaining -- today -- " -- it can check that the key to which each kana alphabetic character is assigned is operated. When the "*" key which are conversion / next candidate key is operated, the transliteration using the word dictionary 14 is performed like the gestalt of the 1st operation, the code of the candidate alphabetic character which corresponds from the word dictionary 14 is read, and this is replaced with the display of a top Noriyuki

character string "***** and **", and is displayed. in addition, the 1st candidate character string of the table corresponding to the digit string "41281" of the word dictionary 14 at the example of drawing 20 -- " -- ** -- obtaining -- today -- " -- having become a hiragana notation is shown.

[0054] In the gestalt of implementation of the above 3rd, the modification of the gestalt of the 3rd operation which displays a line alphabetic character in Roman alphabet is shown in drawing 21. In the case of this modification, on the table with which the CC section 13 is equipped, the code of "1", the code of "A" and the code of "2", the code of "K" and the code of "3", the code of "S", ... and the code of "O", and the code of "W" are matched. therefore -- " -- ** -- obtaining -- today -- ", when it corresponds and keys with "41281" As shown in drawing 21, for every actuation of each key "T", "TA", ..., "TAKYA", the line alphabetic character corresponding to the operated key increasing, and being displayed, and the key input being received and its actuation are infallible -- things -- that is, -- " -- ** -- obtaining -- today -- " -- it can check that the key to which each kana alphabetic character is assigned is operated. in addition, the memory table 22 with which the input-control section 12 shown in drawing 5 is equipped as other configurations although changed with the gestalt of this 3rd operation on the table with which the CC section 13 is equipped -- a hiragana -- the alphabetic character of a line name -- or it is also possible to obtain the alphabetic character of a line name in Roman alphabet. In this case, do not make a figure, a digit string and a candidate alphabetic character, or a candidate character string correspond, make the alphabetic character, the character string and the candidate alphabetic character, or candidate character string of a line name of a hiragana correspond, or the alphabetic character, the character string and the candidate alphabetic character, or candidate character string of a line name of a Roman alphabet is made to correspond, and the word dictionary 14 also constitutes. Thus, even if constituted, of course, that it can check that the key input is received and that the actuation is infallible can obtain a suitable alphabetic character and a character string in the input by the small number of keys like the gestalt of the 1st operation.

[0055] The flow chart corresponding to the program with which the control section 40 of the dictionary retrieval section 15 in the alphabetic character input device concerning the gestalt of the 4th operation equips drawing 22 is shown. With the gestalt of this operation, without supervising actuation of the "*" key which are conversion / next candidate key, a control section 40 resets the code pointer 42 (S24), makes a data selector signal a set condition (S25), takes out further the code stored in the alphabetic character input buffer 41 from a head, and begins retrieval from the block with one alphabetic character of the word dictionary 14.

[0056] the gestalt of this 4th operation -- setting -- " -- ** -- obtaining -- today -- " -- when it corresponds and keys with "41281", as shown in drawing 23, "**", "**", "standby", ..., "Tokyo" are displayed for every actuation of each key. That is, the 1st candidate of the table of the candidate alphabetic character corresponding to "4" of the word dictionary 14 is "**." The 1st candidate of the table of the candidate alphabetic character corresponding to "41" of the word dictionary 14 is "**." The 1st candidate of the table of the candidate alphabetic character corresponding to "412" of the word dictionary 14 is "standby." When the 1st candidate of the table of the candidate alphabetic character corresponding to "4128" of the word dictionary 14 is "leaving" and the 1st candidate of the table of the candidate alphabetic character corresponding to "41281" of the word dictionary 14 is "Tokyo" The candidate alphabetic character or candidate character string changed in above order is displayed without operating conversion / next candidate key in any way.

[0057] Unless conversion / next candidate key is operated, a display is presented with a current retrieval result (S33), it returns to step S22, and processing is continued. Moreover, when a purport without the corresponding candidate is displayed on the LCD display 16 (S29), it sets. Actuation of a definite key, or a conversion / next candidate key is detected (S34, S35), if these key strokes do not exist, it will return to step S22 and processing will be continued. The above-mentioned step S34, Or in S35, if a definite key, or conversion / next candidate key is operated, it will be made to shift to exception processing. For this reason, when the gestalt of this example does not have the candidate alphabetic character or candidate character string corresponding to a figure in the middle of an input, it will have a configuration corresponding to unjust actuation in which a definite key, or conversion / next candidate key is operated.

[0058] In addition, since it avoids becoming having no candidate alphabetic character in the middle of an input, the alphabetic character of the line name concerned can also be assigned to several characters each of the word dictionary 14. In this case, as a result of conversion, as shown in drawing 20, the alphabetic character of a line name is displayed. Moreover, in order to show that it is as a result of [when not operating conversion / next candidate key] conversion, the display result of the modification

which set the 1st original candidate's hiragana code is shown to the 1st candidate of the table of the candidate alphabetic character corresponding to the figure or digit string of the word dictionary 14 at drawing 24 . That is, the 1st candidate of the table of the candidate alphabetic character corresponding to "4" of the word dictionary 14 is "**," the 1st candidate of the table of the candidate alphabetic character corresponding to "41" of the word dictionary 14 -- "-- it is -- it is -- " -- it is -- The 1st candidate of the table of the candidate alphabetic character corresponding to "412" of the word dictionary 14 is "good [**]." the 1st candidate of the table of the candidate alphabetic character corresponding to [the 1st candidate of the table of the candidate alphabetic character corresponding to "4128" of the word dictionary 14 is "*****", and] "41281" of the word dictionary 14 -- "-- ** -- obtaining -- today -- " -- it is . thereby, when it keys with "41281", it is shown in drawing 24 for every actuation of each key -- as -- "**" -- "-- it is -- it is -- " -- "-- ** stylish" and ... "-- ** -- obtaining -- today -- " -- it is displayed. Thus, it is clear for a hiragana alphabetic character to be displayed according to a key stroke, and not to operate conversion / next candidate key, and it can know whether moreover it has inputted correctly.

[0059] Although only one conversion candidate was displayed, when there are two or more the candidate alphabetic characters or candidate character strings of conversion, with the gestalt of the 5th operation, these are expressed as the gestalt of each above-mentioned implementation a predetermined individual every. The important section of the flow chart corresponding to the program with which the control section 40 of the dictionary retrieval section 15 in the alphabetic character input device concerning the gestalt of the 5th operation equips drawing 25 is shown. With the gestalt of this 5th operation, steps S30-S32 of drawing 14 of the gestalt of the 1st operation and processing corresponding to S27 are performed, as shown in drawing 25 . That is, when taking out a candidate from the word dictionary 14, the candidate to the existing predetermined individual is taken out, and it outputs to the retrieval result alphabetic character output buffer 43 with a selection figure (S30-A). Thereby, "Tokyo", "offer", "Tokyu", and "****" are displayed on the display screen of a display 102 with the selection figures 1-4 so that drawing 26 may show caudad.

[0060] A control section 40 makes this candidate alphabetic character decide the input of a selection figure, when it is inputted, waiting (S31-A) and. Moreover, if there is no input of a selection figure, actuation of a next candidate key will be detected (S32) and a next candidate key will be operated, stepping of the code pointer 42 will be carried out [above-mentioned] several predetermined candidate minutes (the example of above-mentioned drawing 26 four pieces) (S27-A), and it will progress to retrieval of other candidates. Thus, with the gestalt of the 5th operation, since these are indicated by coincidence and selection is presented when two or more candidates exist, it is effective in the ability to decide a candidate alphabetic character quickly.

[0061] The block diagram of the alphabetic character input unit concerning the gestalt of the 6th operation is shown in drawing 27 . With the gestalt of this operation, the touch panel 50 stuck on the screen of an indicating equipment 16 is formed, and input-control section 12-A detects the actuation input coordinate value from this touch panel 50. That is, as shown in a display 16 in the screen of the considerable display 102 at drawing 29 , the transparence sheet 51 is stuck. A transparent electrode 52 is formed in the lower predetermined location of the transparence sheet 51, and the transparence counterelectrode 53 is formed in the location on the screen which counters a transparent electrode 52 through the different direction conductive rubber of transparence etc. The transparence counterelectrode 53 which counters the transparent electrode 52 of the lower predetermined location of the transparence sheet 51, and a transparent electrode 52 Four pieces are prepared as shown in drawing. To these It carried out as [explained / like the key matrix explained in drawing 4 , / direction Rhine of a column and direction Rhine of a low were connected, and / from drawing 4 / in drawing 7], and input-control section 12-A has detected whether which location was operated. That is, input-control section 12-A constitutes a location detection means 55 to detect the input actuated valve position in a touch panel 50.

[0062] The flow chart corresponding to the program with which the control section 40 of the dictionary retrieval section 15 in the alphabetic character input device concerning the gestalt of the 6th operation equips drawing 28 is shown. With the gestalt of this operation, steps S30-S32 of drawing 14 of the gestalt of the 1st operation and processing corresponding to S27 are performed, as shown in drawing 28 . That is, when taking out a candidate from the word dictionary 14, the candidate to the existing predetermined individual is taken out, and it outputs to the retrieval result alphabetic character output (for LCD display) buffer 43 with the alphabetic character (or "scrolling") of the "next candidate" (S30-A). Thereby, a display and control section 17 displays "Tokyo", "offer", "Tokyu", and the "next

candidate" on the location of the transparent electrode 52 of the display screen of a display 102 so that drawing 29 may show caudad (S36). A control section 40 detects the actuated valve position in a touch panel 50 (S37), detects the candidate alphabetic character currently displayed by corresponding based on the coordinate of an actuated valve position (S38), and makes this candidate alphabetic character decide (S40). Thus, the dictionary retrieval section 15 functions as a definite means.

[0063] Moreover, when actuation of a next candidate key is detected, (S38) and the pointer for a display are changed (S39), stepping of the code pointer 42 is carried out [above-mentioned] several predetermined candidate minutes (the example of above-mentioned drawing 29 three pieces) (S27-A), and it progresses to retrieval of other candidates. That is, when it exists by advancing these by three pieces when [both] the pointer for displaying a candidate about the candidate character string of the table on which the word dictionary 14 corresponds, and the pointer for retrieval of the candidate alphabetic character out of the table of the word dictionary 14 are common, the following three candidates are taken out and it is displayed. Thus, with the gestalt of the 6th operation, when two or more candidates exist, since [with a touch panel 50] these are indicated by coincidence and it is selectable, it is effective in the ability to decide a candidate alphabetic character quickly certainly.

[0064] The keyboard 11 is equipped with cursor movement keys 61 and 62 and the elimination key 63 while displaying Cursor C for the alphabetic character input unit concerning the gestalt of each operation of this invention correcting an input-statement character etc., as shown in drawing 30 . Here, in order to perform character representation for one line, although cursor movement keys 61 and 62 are constituted by the key of the pair of a longitudinal direction, when adopting the configuration which performs character representation of two or more lines, in addition to this, the cursor movement key of the pair of the vertical direction is prepared. The actuation information on cursor movement keys 61 and 62 is also detected by the input-control section 12, and is given via the CC section 13 to a display and control section 17. [as well as the actuation information on other keys explained by drawing 7 from drawing 4]

[0065] A display and control section 17 indicates the cursor C by migration per one-character viewing area about a cursor display at descending of a character representation field based on a cursor pointer. And a display and control section 17 is controlled by the program which shows a cursor pointer to the flow chart of drawing 31 based on the input of an alphabetic character, and the actuation information on a cursor movement key. That is, if arrival of a character code is detected (S41) and a character code comes, 1 stepping of the cursor pointer will be carried out (S42). By this, Cursor C moves forward by one character. Moreover, if arrival of the actuation information on a cursor movement key detects whether the cursor advance arose (S43) and actuation information does not come it when a character code does not come, it returns to step S41 and a monitor is continued, and if a cursor advance arises, a cursor pointer will be fluctuated according to the migration direction (S44). By this, Cursor C will move forward or retreat per one character. When correcting the alphabetic character of an incorrect input, it moves to the character position which should correct Cursor C by cursor movement keys 61 and 62, the elimination key 63 is operated and eliminated, and a right alphabetic character is inputted. In this case, although a display will not be performed with the gestalt of the 1st operation if it is not after operating conversion / next candidate key, in exception processing after displaying on the LCD display 16 a purport without the candidate to whom step S29 corresponds, like the gestalt of the 2nd operation, an input figure or an input digit string is displayed, and correction is guaranteed here. That is, in exception processing, the digit string set to the character string input buffer 41 is sent out to a display and control section 17. If conversion / next candidate key is operated after correction, processing after step S23 of the flow chart of drawing 14 will be performed.

[0066] The block diagram of the alphabetic character input unit concerning the gestalt of the 7th operation is shown in drawing 32 . With the gestalt of this operation, retrieval SW(switch) 18 is again connected to the CC section 13, when the purport which does not have the corresponding candidate as a result of word dictionary retrieval is displayed on the LCD display 16, it can change about an input-statement character or an input string, and the directions to which conversion by dictionary retrieval is made to carry out again can be given. That is, when a candidate alphabetic character or a candidate character string is not obtained, on condition that the above-mentioned re-degree retrieval SW18 is ON, the CC section 13 and the dictionary retrieval section 15 change about an input-statement character or an input string, and function as a modification means 60 into which it is made to change again. In addition, retrieval SW18 consists of registers instead of a mechanical switch again.

[0067] The flow chart corresponding to the program with which the control section 40 of the dictionary retrieval section 15 in the alphabetic character input device concerning the gestalt of the 7th operation

equips drawing 33 is shown. With the gestalt of this operation, in retrieval processing of the word dictionary 14, a control section 40 resets retrieval SW18 again while clearing the alphabetic character input buffer 41 (S48), and it waits for the code (code of a numerical keypad) of an input-statement character or an input string to come (S22). The processing after this is the same as that of the gestalt of the 1st operation, and in step S29, when a purport without the corresponding candidate is displayed on the LCD display 16, it is different in that step S45 to the step S47 is processed.

[0068] That is, in step S29, when a purport without the corresponding candidate is displayed on the LCD display 16 next, turning on and off of retrieval SW18 is detected again (S45). At the time of the beginning, by reset in step S48, since it is off, it branches to NO, and the last one character (figure) is deleted (S46), retrieval SW18 is again set to ON (S47), and about the alphabetic character (figure) or alphabetic character (figure) train acquired as a result of deletion, in order to search the word dictionary 14, the processing from step S24 is repeated. Thus, by deleting one character at the tail end of a character string, being in agreement with the candidate alphabetic character which attached words, such as a particle, are deleted and is registered into the word dictionary 14 is expected. That is, automatic error-correction of an input string is performed by the gestalt of this operation.

[0069] In addition, when a purport without the candidate who corresponds in step S29 is displayed on the LCD display 16 in spite of modification of such a character string, since retrieval SW18 serves as ON again, in step S45, it branches to YES, and already progresses to exception processing. It is possible to carry out in this exception processing, as explained in drawing 30 and drawing 31, and to correct. Moreover, about whether the gestalt of this operation is functioned, when the input of special numbers (being the key input which is not usually used for example, "###?(?= figure) ? (=? figure) etc." etc.) is made from a keyboard 11, a setup is canceled and automatic error-correction does not carry out. Then, if automatic error-correction is needed, the same special number as the above can be inputted and an automatic correction function can be set to ON.

[0070] The block diagram of the alphabetic character input unit concerning the gestalt of the 8th operation is shown in drawing 34. With the gestalt of this operation, the error amendment table 70, memory (PMEM) 71, and memory (KMEM) 72 are connected to the CC section 13. The error amendment table 70 of the gestalt of this operation is a candidate table of the key which serves as an operation mistake in the case of a key stroke, and as shown in drawing 35, it is constituted. That is, corresponding to class [of numerical keypad] "1" - "0", the key (namely, key which approaches in arrangement) which may carry out an operation mistake is arranged in the high order of a probability. A figure candidate's ranking currently used for replacement is memorized by memory 71, and it is set to memory 72 what position of an input-statement character or an input string is replaced. When a candidate alphabetic character or a candidate character string is not obtained, the CC section 13 and the dictionary retrieval section 15 use the above-mentioned error amendment table 70, change about an input-statement character or an input string, and function as modification means 60-A into which it is made to change again.

[0071] The flow chart corresponding to the program with which the control section 40 of the dictionary retrieval section 15 in the alphabetic character input device concerning the gestalt of the 8th operation equips drawing 36 and drawing 37 is shown. With the gestalt of this operation, in retrieval processing of the word dictionary 14, a control section 40 clears memory (PMEM) 71 and memory (KMEM) 72 while clearing the alphabetic character input buffer 41 (S50), and it waits for the code (code of a numerical keypad) of an input-statement character or an input string to come (S22). The processing after this is the same as that of the gestalt of the 1st operation, and in step S29, when a purport without the corresponding candidate is displayed on the LCD display 16, it is different at the point which progresses to pre exception processing shown in drawing 37.

[0072] In pre exception processing shown in drawing 37, "1" increment of the value of memory 71 is carried out (S51), and it detects whether a candidate is shown in the error table 70 (S52). That is, it has detected whether there is any 1st candidate who should permute. Since there is a candidate at the beginning so that clearly from drawing 35, it branches to YES, "1" increment of the contents of memory 72 is carried out (S54), and what the 1st of an input-statement character or an input string should be permuted for in this case is directed. And it detects whether the alphabetic character of the location directed by memory 72 exists in the alphabetic character input buffer 41 (S55). When the alphabetic character of one or more characters exists, the error amendment table 70 is searched, the alphabetic character of the location which the memory 72 in the character string input buffer 41 shows in the alphabetic character which searched the alphabetic character of correspondence (S56) and was obtained from the candidate ranking which the alphabetic character which memory 72 shows, and

memory 71 show here is permuted, and the processing from step S24 of the flow chart of drawing 36 is continued. That is, the word dictionary 14 is searched about the character string obtained as a result of the permutation, and a candidate alphabetic character is obtained. If the above-mentioned result and a retrieval result are not obtained, pre exception processing is performed again and a permutation is performed about the next candidate. If the candidate of a certain character position dies, in step S52, it will branch to NO, memory 71 will be reset (S53), and "1" increment of the contents of memory 72 will be carried out (S54). Thereby, about the 2nd alphabetic character of an input string, a permutation is performed and it goes. It is possible to **, for permutation correction to be automatically carried out, when the key which approaches by the error of a key stroke is operated according to the gestalt of this operation, and to input a request. Thus, without obtaining a retrieval result, even if automatic replacement correction is performed, after the permutation of the alphabetic character of the last in a character string is completed, in step S55, it branches to NO, and exception processing is performed. [0073] It is possible to carry out in the above-mentioned exception processing, as explained in drawing 30 and drawing 31, and to correct. Moreover, about whether the gestalt of this operation is functioned, when the input of special numbers (being the key input which is not usually used for example, "###? (figure) ? (figure) etc." etc.) is made from a keyboard 11, a setup is canceled and permutation correction is not performed. Then, if permutation correction is needed, the same special number as the above can be inputted and an automatic replacement correction function can be set to ON. In addition, with the gestalt of this operation, although the permutation was performed from the head side of an input string, even if it performs a permutation from a tail, the same effectiveness is expectable.

[0074] The block diagram of the alphabetic character input unit concerning the gestalt of the 9th operation is shown in drawing 38. With the gestalt of this operation, the character range information table 75 is connected to the CC section 13, and as shown in this character range information table 75 at drawing 39, the range (can the kanji be treated even in a kana?) of the character which can be treated corresponding to the identification information (for example, telephone number) of a transmitting partner terminal is memorized beforehand. The CC section 13 constitutes the range information acquisition means 76 which acquires range information from the character range information table 75, and is passed to the dictionary retrieval section 15 which is a transliteration means.

[0075] By performing the program of the flow chart of drawing 40, the CC section 13 which is the range information acquisition means 76 acquires range information. That is, it detects whether there is any phase hand assignment (S61). With the gestalt of this operation, before becoming the mode of an alphabetic character input unit, by the special number, it directs to input by phase hand assignment, and the identification information (telephone number) of a partner terminal is inputted. The CC section 13 incorporates this (S62), and acquires the range information which shows the range of the character which can treat the destination terminal which searches the character range information table 75 and corresponds (S63). This acquired range information is memorized to the register with the above-mentioned identification information (telephone number) (S64). It progresses to the retrieval routine to the word dictionary 14 after this.

[0076] The flow chart corresponding to the program with which the control section 40 of the dictionary retrieval section 15 in the alphabetic character input device concerning the gestalt of the 9th operation equips drawing 41 is shown. Processing until it detects a candidate alphabetic character or a candidate character string in step S26 with the gestalt of this operation is equal to the gestalt of the 1st operation. However, if a candidate is detected, when it detects whether the kanji can be treated in a partner terminal with reference to the above-mentioned register (S60) and the kanji cannot be treated, the candidate of a kana code is chosen (S61). In this case, you may choose for an additional remark display of a kanji character code. thereby, when a partner terminal cannot treat the kanji, the candidate in a kana is chosen and displayed with the kanji of an additional remark notation if it is in the gestalt of the operation which carries out an additional remark notation.

[0077] The identification information of the partner terminal memorized by the character string code and the above-mentioned register from the character input/output section 7 to the message control section 6 as it was shown in drawing 2, when it had and an input-statement character was decided which is the above is given, and transmission of call origination and data is performed through the transceiver section 3 and an antenna 5. Thus, the transliteration according to the capacity of a partner terminal is made, a suitable code is sent and processing does not become impossible at a partner terminal. In addition, when identification information without registration is inputted into the character range information table 75, it processes as what cannot treat the kanji. That is, it prevents that processing becomes impossible in a partner terminal by performing processing of a low function.

[0078] In addition, although considered as the range by the ability of the kanji to be treated with the gestalt of the 9th operation, others may have the partition of range, such as range to a Roman alphabet notation or the external character by the same kind, to a figure. It corresponds in these cases and the range information on a table is subdivided. thus, when carrying out (a ** -- it comes out so also with the gestalt of the 9th operation), the dictionary configuration doubled with processing of a low function is required. That is, a kana character code is prepared to the word same in addition to the candidate of the kanji. Moreover, the candidate of a figure and the candidate of a Roman alphabet notation are prepared, and dictionary-ization is performed.

[0079] Furthermore, with the gestalt of the 9th operation, although range information was prepared beforehand, the contents of this character range information table 75 can be updated. That is, by a special number etc., the contents of the character range information table 75 direct updating, and input the pair of phase hand identification information and range information. Thereby, the CC section 13 updates the contents of the character range information table 75. At the time of the same phase hand identification information, information is overwritten, and when it is new phase hand identification information, new registration is made. Furthermore, you may make it send out the range information which formed the pre-procedure at the time of the communication link with a partner terminal, and you may make it acquire range information with a DTMF signal, and the switched network acquired from the partner terminal using a control channel. Also by these cases, it is effective in the ability to transmit character strings, such as a message according to the capacity of a partner terminal.

[0080] Next, the gestalt of operation of the 10th of this invention is explained. It has the left translation key 65 for moving the cursor K which indicates the location of the alphabetic character inputted in a display 102, or a character string to be the mode key 64 for the portable wireless telephone with which the alphabetic character input unit concerning the gestalt of this operation was applied to choose two or more processing modes as the ten key 103 bottom as shown in drawing 42 , and the right translation key 66. The input of a predetermined special number may be made to substitute these keys for either of the ten keys 103. The mode key 64 is for calling the mode to hold one after another for every actuation, for example, this equipment has talk mode, data communication mode, alphabetic character input mode, telephone number register mode, fixed form sentence input mode, search mode, etc. When starting, it is talk mode, it becomes talk mode by one actuation of the mode key 64, and becomes data communication mode by one more actuation of the mode key 64, and the mode is changed for every actuation below, and if the mode key 64 is further operated when it is the last mode, it consists of initial states so that it may return to talk mode. If it continues operating the left translation key 65 or the right translation key 66 when the display of a multi-line is made by the display 102, as shown in drawing 42 , it can be made to continue and move to this line. That is, if it continues operating the right translation key 66 when Cursor K is located in the 1st line rightmost location for example, it will move to the 2nd line rightmost location from the 1st line leftmost location, and will move in the 2nd line leftmost location direction further. As explained using drawing 30 and drawing 31 , a display and control section 17 performs the display control of this cursor K by CC section 13A shown in drawing 43 incorporating keypad information through the input-control section 12, and giving this to a display and control section 17.

[0081] In the gestalt of this operation, the attribute of the alphabetic character concerning an input or a character string is specified, a suitable candidate alphabetic character or a candidate character string can be searched from the word dictionary 14, and desired words (kanji etc.) are obtained quickly. The configuration of the alphabetic character input unit concerning the gestalt of this operation is shown in drawing 43 . That is, a dictionary means 310 by which an input-statement character, the candidate alphabetic character of an input string and a conversion result or a candidate character string, and its attribute information were matched, and this alphabetic character input unit was memorized, Two or more keys to which two or more kana alphabetic characters were assigned, and the conversion / next candidate key for directing a transliteration, The input means 300 for inputting an alphabetic character or a character string, and required information including the definite key for making a conversion result decide, The output means 330 for displaying the candidate alphabetic character or candidate character string of a conversion result at least, and outputting it, An attribute specification means 350 to specify the attribute of an input-statement character or an input string based on the information inputted from the above-mentioned input means 300, About the alphabetic character corresponding to the key inputted from the above-mentioned input means 300, or the inputted character string of two or more key correspondences, search the above-mentioned dictionary means 310 and it faces in quest of a candidate alphabetic character or a candidate character string. It asks for the candidate alphabetic

character or candidate character string applicable to the attribute information specified by the above-mentioned attribute specification means 350, and transliteration means 320A which sends out this candidate alphabetic character or a candidate character string to the above-mentioned output means 330 is provided. The above-mentioned attribute specification means 350 is constituted by CC section 13A and the input word attribute storage section 19. The input word attribute storage section 19 is used in order to memorize the alphabetic character by which the current input is carried out, or the attribute information on a character string.

[0082] Some contents of the word dictionary 14 which constitutes the dictionary means 310 are shown in drawing 44 . That is, corresponding to the code of the figure by actuation of a ten key 103, an alphabetic character with the alphabetic character in a kana or a character string, the kanji, etc. or the candidate of a character string, an alphabetic character with the above-mentioned kanji etc., or the attribute information about the candidate of a character string is further memorized like the name of a place, the name of a person, and the corporate name. In this example, attribute information may be memorized two or more, although referred to as one to the candidate of an alphabetic character with the above-mentioned kanji etc., or a character string. For example, an attribute "the name of a place" is also an attribute "a location", and can apply an "action" as an attribute "general", for example, an attribute of "please give." The configuration on actual of this word dictionary 14 is as having explained using drawing 1313 from drawing 11 .

[0083] Moreover, since the equipment of the gestalt of this operation specifies an attribute, CC section 13A is equipped with memory as shown in drawing 45 and drawing 46 . The contents memory 77 of directions the contents of directions for acquiring two or more modes and attributes concerning processing of this equipment were matched and remembered to be is shown in drawing 45 . Here, if it corresponds to talk mode and data communication mode, "0" is set. It is shown that processing about an attribute is not performed, if it corresponds to alphabetic character input mode, "directions by key input" and registration are made, and it sets to alphabetic character input mode. If following this is shown and it corresponds to telephone number register mode, the input mode of the fixed form sentence 1, and the mode of retrieval 3 when attribute information is directly inputted by key input The jump place address "aaa" of the cursor location memory 78 etc. is set, and attribute information (the "name of a place", "corporate name", etc.) is set as they are in retrieval 1 and retrieval 2. P in drawing 45 is a pointer, it is shown whether which the mode is performed and it is shown in the example of this drawing 45 that telephone number register mode is performed.

[0084] Drawing 46 shows the cursor location memory 78 the alphabetic character which starts an input corresponding to the location of Cursor K, or the attribute information on a character string was matched and remembered to be. For example, in telephone number register mode, the jump place address aaa is obtained from the contents memory 77 of directions. or [that the location of Cursor K belongs to any of a "cursor coordinate" by flying to the address aaa of the cursor location memory 78] (x1 - x2 →) x3 - x4, x5 -x6, and x7 -x8 The coordinate of the field of the "identifier" of an input item, "affiliation", the "address", and the "telephone number" is expressed, respectively. It responds and it is specified any of a "name of a person", a "corporate name", the "name of a place", and a "figure" attributes are. That is, in telephone number register mode, a display as shown in drawing 42 is performed to a display 102, and since the items to input are an "identifier", "affiliation", the "address", and the "telephone number", the attribute "a name of a person" corresponding to these items, a "corporate name", the "name of a place", and a "figure" are memorized.

[0085] Since a display which inputs doing the action of a request in a desired location at the time of a request (at the time) into a display 102 in the input mode of the fixed form sentence 1 as shown in drawing 47 accomplishes to the above, with coordinates x13-x14, it is an attribute at "the time (at the time)", an attribute is the "name of a place" with coordinates x15-x16, and an attribute serves as an "action" with coordinates x21-x22. Input mode of this fixed form sentence 1. "He is "Patent Office (location) to" on tomorrow daytime (at the time)." "shall let's meet? (Action) It is possible to input " etc. Furthermore, the mode of retrieval 1 can be used so that the display which is for searching the data of the man of living in a specific location, and asks a display 102 for the input of the name of a place as shown in drawing 48 may be made, for example, "Tokyo" may be inputted from the contents registered for example, in the above-mentioned telephone number register mode and the man of living in Tokyo may be searched. For this reason, in the mode of retrieval 1, an attribute is the "name of a place", and this attribute "the name of a place" is directly matched with the contents memory 77 of directions by retrieval 1, and it is memorized. Furthermore, the mode of retrieval 2 is for searching the data of those who belong to a specific organization from the contents registered for example, in the above-mentioned

telephone number register mode, and it can be used so that those who the display which asks a display 102 for the input of a corporate name as shown in drawing 49 is made, for example, input a "marketing department" etc., and belong to a marketing department may be searched. For this reason, in the mode of retrieval 2, an attribute is a "corporate name", and this attribute "a corporate name" is directly matched with the contents memory 77 of directions by retrieval 2, and it is memorized.

[0086] By the program of the flow chart shown in drawing 50, since CC section 13A operates as an attribute information specification means 350, it explains this. It is started by starting of this equipment, and mode detection is performed (S71). That is, it is made to move so that the mode in which the pointer P of drawing 45 corresponds according to actuation of the mode key 64 may be pointed out, and the mode which this pointer P points out is detected. Here, with reference to the mode "telephone number registration" concerned of the contents memory 77 of directions shown in drawing 45, it detects whether the contents of attribute directions are set (S72). While acquiring the coordinate of Cursor K from a display and control section 17 since the jump place address aaa to the coordinate location memory 78 is set up if it corresponds to "telephone number registration", the range of the cursor coordinate memorized to this coordinate value and the jump place address aaa to the coordinate location memory 78 is compared, and whether Cursor's K being in the range of which cursor coordinate and the attribute information which detects and corresponds are acquired (S73). For example, as shown in drawing 42, when Cursor K is in the field of an input item "affiliation", the coordinate of Cursor K is coordinate x3 -x4 of the cursor location memory 78. It is in the range and an attribute "a corporate name" can be acquired. In addition, when like [the mode of retrieval 1 etc.], attribute information can be directly acquired from the contents memory 77 of directions. Next, CC section 13A sets this attribute information to the input word attribute storage section 19, returns to step (S74) 71, and continues processing. In addition, in step S72, when it is detected that the contents of attribute directions are not set, it sets "he has no attribute" to the input word attribute storage section 19, it returns to step (S75) 71, and processing is continued (when it is detected that "0" is set). Thus, CC section 13A has always changed attribute information.

[0087] The detail of dictionary retrieval section 15A adopted in the gestalt of this operation is shown in drawing 51. This dictionary retrieval section 15A is a point equipped with the retrieval condition attaching part 45 for receiving and memorizing that CC section 13A reads and sends out the attribute information on the input word attribute storage section 19, and is different from the dictionary retrieval section 15 of drawing 9. Control-section 40A sets attribute information to the above-mentioned retrieval condition attaching part 45, and when attribute information is acquired from the word dictionary 14 with word data, it determines a candidate as compared with the attribute information on the retrieval condition attaching part 45.

[0088] Since the above-mentioned control-section 40A operates by the program of the flow chart shown in drawing 52, this is explained. Control-section 40A clears the alphabetic character input buffer 41 (S21), and CC section 13A sets it to the retrieval condition attaching part 45 in response to the attribute information which reads from the input word attribute storage section 19, and is sent out (S62). Consequently, the attribute information on the input word attribute storage section 19 or "he has no attribute information" are set to the retrieval condition attaching part 45. The actuation as the case of the gestalt of the 1st operation with S26 [same] which compares with the code of the word dictionary 14 the figure or digit string which starts an input from the following step S22 is continued. Here If the candidate alphabetic character corresponding to the inputted figure or digit string is not memorized in the word dictionary 14 If a NEXT signal is given to the code pointer 42, stepping of the value is carried out (S27), it detects whether there is no candidate whom the code pointer 42 points out in step S28, and the entry of the last was completed and there is another entry, it will return to step S26 and processing will be continued. And if it is detected at step S28 that it is the last, the contents of the retrieval condition attaching part 45 will be investigated, and it will detect whether attribute information is set (S63). Here, if attribute information is set, it will reset, will change into "he has no attribute information" (S64), it will return to step S25 further, and actuation will be continued.

[0089] On the other hand, if a candidate is detected in step S26, the contents of the retrieval condition attaching part 45 will be investigated, and it will detect whether attribute information is set (S65). Here, if attribute information is set, it detects whether this attribute information and a candidate's acquired attribute information are in agreement (S66), and if not in agreement, it will progress to step S27 and other candidates will be searched. As stated above, by drawing 13, attribute information is added after each candidate (Str1-n), and is memorized. If attribute information is in agreement in step S66 while performing such processing, this candidate's code will be outputted to the retrieval result alphabetic

character output buffer 43 (S30), and the same processing as the gestalt of the 1st operation will be performed henceforth. Moreover, the same processing as the gestalt of the 1st operation is continued, without detecting the coincidence inequality of attribute information as attribute information is reset, i.e., "with no attribute information", in step S65.

[0090] Since the candidate of the attribute concerned is extracted and outputted when it **, the attribute of the alphabetic character which starts an input according to the gestalt of this operation, or a character string is specified and a candidate alphabetic character or a candidate character string is searched from the word dictionary 14, a desired word etc. can be obtained quickly (kanji etc.). That is, since only the candidates (for example, "name of a place") of a desired attribute are chosen and outputted when there are two or more candidates corresponding to the inputted figure or digit string, out of the candidate scolded to some extent, an operator can get the alphabetic characters (kanji etc.) concerning a desired conversion result, and is efficient.

[0091] In addition, in the above-mentioned example of a configuration, the operating frequency information for every word can be given to the word dictionary 14, time amount until the candidate who uses it well is outputted more early and obtains a conversion result in the example of a configuration constituted so that it may output from a candidate with high operating frequency can be shortened more, and it is convenient.

[0092] Next, the alphabetic character input unit concerning the gestalt of operation of this invention for the English areas is explained. The front view of the portable wireless telephone with which the alphabetic character input unit concerning the gestalt of this operation was applied to drawing 53 is shown. If a hand set 101 consists of a case of the shape of a little flat rectangular parallelepiped and it applies to the lower part from the center of a front face, ten key (dialing key) 103E which consists of a key of four-line three trains is prepared, and the display 102 for displaying information, such as an alphabetic character and a notation, is formed in the upper part. Moreover, receiver section 104A for hearing the voice sent is prepared above a display 102, and transmission section 105A for inputting voice is prepared in the lower part location of ten key 103E.

[0093] The internal configuration of the above-mentioned portable wireless telephone is equal to the thing of the gestalt of the 1st operation shown in drawing 2. The block diagram when the portable wireless telephone of drawing 53 becomes a mode of operation as an alphabetic character input unit is shown in drawing 54. This configuration is equivalent to the part which consists of the input section 2 and the character input/output section 7 in the internal configuration of the portable wireless telephone of drawing 2. The keyboard 11 for an alphabetic character input device to input an alphabetic character etc. and the input-control section 12 which incorporates the information on the key stroke in a keyboard 11, and is sent out to the CC section 13, Word dictionary 14E which is dictionary means 310E the CC section 13 which carries out generalization control of each part of an alphabetic character input unit, and an input-statement character, the candidate alphabetic character of an input string and a conversion result or a candidate character string was matched and remembered to be, The dictionary retrieval section 15 which obtains the candidate alphabetic character or candidate character string which corresponds with reference to word dictionary 14E about the input-statement character or input string given from the CC section 13, The display 16 which consists of LCD as which information, such as an alphabetic character, is displayed, and the display and control section 17 which performs control for making a display 16 display a candidate alphabetic character or a candidate character string on the bottom of control of the CC section 13 are provided. Two or more alphabet is assigned to several character each key of ten key 103E of a keyboard 11 every.

* NOTICES *

JPO and NCIP are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, according to the above-mentioned alphabetic character input unit, when there was no conversion table fundamentally, it could not key, but there was a trouble of being inconvenient. On the other hand, the portable wireless telephone which assigned each of a ten key 203 two or more kana alphabetic characters as shown in drawing 81 is known. In this equipment, the count and alphabetic character of actuation in each key are matched and memorized. If the corresponding alphabetic character at the left end of declared is inputted and the number of actuation increases 1 time below when the count of actuation is 1 in each key, the alphabetic character shifted rightward [declared] every [1] will be inputted. for example, -- "-- ** -- as shown in drawing 82 , "444411122888111" and a ten key 203 are operated to obtain an input with method of float (Tokyo)." thereby -- the display 202 of the portable wireless telephone of drawing 77 -- the count of actuation of a key -- corresponding -- "-- ** -- method of float" will be displayed.

[0006] According to this alphabetic character input unit, although it became unnecessary [a conversion table] as mentioned above, the number of key strokes increased extremely and there was a trouble of causing an incorrect input accidentally [count / of the count of actuation] depending on the case. Moreover, although putting a figure in order by the word play and inputting was also performed in the selective-calling receiver etc., it is a premise to know the message concerning the digit string and the contents of the word play, and, generally there was a trouble of being user-unfriendly. Moreover, in a word play, there was also a message which cannot be expressed and there was also a problem that it could be hard to convey an intention to a partner exactly.

[0007] This invention was made in view of the trouble of the above conventional alphabetic character input units, the purpose has an unnecessary conversion table, and, moreover, it is offering the alphabetic character input unit which can input a required message etc., without the number of key strokes increasing.

[0008]

[Translation done.]

* NOTICES *

JPO and NCIP1 are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

MEANS

[Means for Solving the Problem] A dictionary means by which the input-statement character, the candidate alphabetic character of an input string and a conversion result, or the candidate character string was matched, and the alphabetic character input unit of this invention according to claim 1 was memorized, Two or more keys to which two or more alphabetic characters were assigned, and the conversion / next candidate key for directing a transliteration, The input means for inputting an alphabetic character or a character string including the definite key for making a conversion result decide, The output means for displaying the candidate alphabetic character or candidate character string of a conversion result at least, and outputting it, It is characterized by providing a transliteration means to search said dictionary means, to ask for a candidate alphabetic character or a candidate character string, and to send out this candidate alphabetic character or a candidate character string to said output means about the alphabetic character corresponding to the key inputted from said input means, or the inputted character string of two or more key correspondences. When the key to which two or more alphabetic characters were assigned is operated as a result of being constituted as above, and conversion / next candidate key is operated, about the alphabetic character corresponding to the inputted key, or the inputted character string of two or more key correspondences, a dictionary means will be searched, it will ask for a candidate alphabetic character or a candidate character string, and this candidate alphabetic character or a candidate character string will be sent out to an output means.

[0009] A dictionary means by which the input figure, the candidate alphabetic character of an input digit string and a conversion result, or the candidate character string was matched, and the alphabetic character input unit of this invention according to claim 2 was memorized, The ten key with which two or more alphabetic characters were assigned, and the conversion / next candidate key for directing a transliteration, The input means for inputting an alphabetic character or a character string including the definite key for making a conversion result decide, The output means for displaying the candidate alphabetic character or candidate character string of a conversion result at least, and outputting it, It is characterized by providing a transliteration means to search said dictionary means, to ask for a candidate alphabetic character or a candidate character string, and to send out this candidate alphabetic character or a candidate character string to said output means about the figure corresponding to the ten key inputted from said input means, or the inputted digit string of two or more key correspondences. When the ten key with which two or more alphabetic characters were assigned is operated as a result of being constituted as above, and conversion / next candidate key is operated, about the alphabetic character corresponding to the inputted ten key, or the inputted character string of two or more ten key correspondences, a dictionary means will be searched, it will ask for a candidate alphabetic character or a candidate character string, and this candidate alphabetic character or a candidate character string will be sent out to an output means.

[0010] The alphabetic character input unit of this invention according to claim 3 will be characterized by having the code sending-out means with which detects the code corresponding to this key, sends out to an output means, and a display is presented, if the key to which the alphabetic character of an input means was assigned is operated. If the key to which the alphabetic character was assigned is operated as a result of being constituted as above, the code corresponding to this key will be detected and character representation corresponding to the key which sent out to the output means and was operated will be performed. That is, the figure and the alphabet corresponding to a key which were operated are displayed.

[0011] In the alphabetic character input unit of this invention according to claim 4, it is characterized by searching a dictionary means, asking for a candidate alphabetic character or a candidate character

string, sending out this candidate alphabetic character or a candidate character string to an output means, and presenting a display, if the key to which the alphabetic character of an input means was assigned for the transliteration means is operated. If the key to which the alphabetic character was assigned is operated as a result of being constituted as above, a dictionary means will be searched, it will ask for a candidate alphabetic character or a candidate character string, and the display of this candidate alphabetic character or a candidate character string will be made.

[0012] In the alphabetic character input unit of this invention according to claim 5, it is characterized by for a transliteration means searching a dictionary means and asking for the candidate alphabetic character of the 1st place, or a candidate character string, if the key to which the alphabetic character of an input means was assigned is operated, sending [for a candidate alphabetic character or a candidate character string to be memorized by the dictionary means in predetermined order, and] out this candidate alphabetic character or a candidate character string to an output means, and presenting a display. If the key to which the alphabetic character of an input means was assigned is operated as a result of being constituted as above, a dictionary means will be searched, it will ask for the candidate alphabetic character of the 1st place, or a candidate character string, and the display of this candidate alphabetic character or a candidate character string will be made.

[0013] In the alphabetic character input unit of this invention according to claim 6 When a transliteration means searches a dictionary means, and asks for a candidate alphabetic character or a candidate character string and there are two or more candidate alphabetic characters or candidate character strings While sending out these candidate alphabetic characters or a candidate character string to a predetermined individual [every] output means and presenting a display, it is characterized by a candidate selection means to choose about two or more candidate alphabetic characters or candidate character strings which were displayed on this output means possessing. As a result of being constituted as above, when there are two or more candidate alphabetic characters or candidate character strings, it is displayed a predetermined individual every and these candidate alphabetic characters or a candidate character string can be chosen about two or more of these candidate alphabetic characters or candidate character strings that were displayed.

[0014] It is characterized by equipping the alphabetic character input device of this invention according to claim 7 with a location detection means for a touch panel to be prepared in the candidate alphabetic character of an output means, or the viewing area of a candidate character string, and to detect the input actuated valve position in this touch panel, and a definite means to make a conversion result decide based on correspondence relation with the display position of the detection result of this location detection means, a candidate alphabetic character, or a candidate character string. As a result of being constituted as above, the input actuated valve position in the touch panel of the viewing area of a candidate alphabetic character or a candidate character string will be detected, and a conversion result will be decided based on correspondence relation with the display position of this detection result, a candidate alphabetic character, or a candidate character string.

[0015] In the alphabetic character input unit of this invention according to claim 8, in processing by the transliteration means, when a candidate alphabetic character or a candidate character string is not obtained, it changes about an input-statement character or an input string, and is characterized by having a modification means to make conversion by said transliteration means perform again. As a result of being constituted as above, when a candidate alphabetic character or a candidate character string is not obtained, it changes about an input-statement character or an input string, and conversion is performed again.

[0016] In the alphabetic character input unit of this invention according to claim 9, a modification means is characterized by deleting the tail alphabetic character of an input string and changing an input string. As a result of being constituted as above, when a candidate alphabetic character or a candidate character string is not obtained, the tail alphabetic character of an input string is deleted, and it changes about an input-statement character or an input string, and conversion is performed again.

[0017] In the alphabetic character input device of this invention according to claim 10, the modification means is equipped with the candidate table of the key used as an operation mistake in the case of actuation of a key, and it is characterized by changing an input-statement character or an input string according to this candidate table. As a result of being constituted as above, when a candidate alphabetic character or a candidate character string is not obtained, in the case of actuation of a key, according to the candidate table of the key used as an operation mistake, it changes about an input-statement character or an input string, and conversion is performed again.

[0018] The alphabetic character input unit of this invention according to claim 11 is equipped with a

transmitting means to transmit the fixed alphabetic character or the fixed character string, and a range information acquisition means to acquire the range information on a character code that a transmitting partner terminal can be processed, and is characterized by searching a dictionary means based on the range information on a transmitting partner terminal that the transliteration means was acquired by said range information acquisition means. As a result of being constituted as above, the range information on a character code that a transmitting partner terminal can be processed is acquired, and retrieval of a dictionary means is performed based on this.

[0019] The alphabetic character input unit of this invention according to claim 12 is equipped with the range information table on which a transmitting means transmit the fixed alphabetic character or the fixed character string, and the identification information of a transmitting partner terminal and the range information on the character code which can be processed were matched, and is characterized by to search a dictionary means based on the range information for which a transliteration means is acquired from said range information table according to the identification information of a transmitting partner terminal. As a result of being constituted as above, from the range information table on which the identification information of a transmitting partner terminal and the range information on the character code which can be processed were matched, the range information on a character code that a transmitting partner terminal can be processed is acquired, and retrieval of a dictionary means is performed based on this.

[0020] The alphabetic character input unit of this invention according to claim 13 A dictionary means by which an input-statement character, the candidate alphabetic character of an input string and a conversion result or a candidate character string, and its attribute information were matched and memorized, Two or more keys to which two or more alphabetic characters were assigned, and the conversion / next candidate key for directing a transliteration, The input means for inputting an alphabetic character or a character string, and required information including the definite key for making a conversion result decide, The output means for displaying the candidate alphabetic character or candidate character string of a conversion result at least, and outputting it, An attribute specification means to specify the attribute of an input-statement character or an input string based on the information inputted from said input means, About the alphabetic character corresponding to the key inputted from said input means, or the inputted character string of two or more key correspondences, search said dictionary means and it faces in quest of a candidate alphabetic character or a candidate character string. It asks for the candidate alphabetic character or candidate character string applicable to the attribute information specified by said attribute specification means, and is characterized by providing a transliteration means to send out this candidate alphabetic character or a candidate character string to said output means. As a result of being constituted as above, only a candidate alphabetic character with the specified attribute and an attribute in agreement or a candidate character string will be displayed with an output means.

[0021] It carries out the alphabetic character input unit of this invention according to claim 14 being equipped with the contents memory of directions the contents of directions for acquiring two or more modes and attributes concerning processing were matched and remembered to be, and an attribute specification means detecting the mode under processing, acquiring the contents of directions corresponding to this mode from the above-mentioned contents memory of directions, and acquiring the attribute of the alphabetic character which starts an input based on these contents of directions, or a character string as the description. Since it is constituted as above, only the candidate alphabetic character in which the attribute of the alphabetic character which starts an input with the mode under processing, or a character string is specified, and has the specified attribute and an attribute in agreement, or a candidate character string will be displayed with an output means.

[0022] The alphabetic character input unit of this invention according to claim 15 A cursor display means to display the cursor which shows the alphabetic character under input, or the location of a character string on an output means on the occasion of the input of an alphabetic character or a character string, It has the cursor location memory the alphabetic character which starts an input corresponding to the location of this cursor, or the attribute information on a character string was matched and remembered to be. An attribute specification means It is characterized by acquiring the attribute of the alphabetic character concerning an input, or a character string from the display position of the cursor by the above-mentioned cursor display means, and the contents of the above-mentioned cursor location memory. Since it is constituted as above, only the candidate alphabetic character in which the attribute of the alphabetic character concerning an input or a character string is specified from the display position of cursor, and has the specified attribute and an attribute in agreement, or a

candidate character string will be displayed with an output means.

[0023] In the alphabetic character input unit of this invention according to claim 16, an attribute specification means is characterized by acquiring the attribute of the alphabetic character concerning an input, or a character string according to the alphabetic character concerning the subsequent input inputted from an input means, or the contents of directions of the attribute of a character string. Since it is constituted as above, only the candidate alphabetic character in which the attribute of the alphabetic character concerning a subsequent input or a character string is specified by attribute directions of an operator, and has the specified attribute and an attribute in agreement with them, or a candidate character string will be displayed with an output means.

[0024] The alphabetic character input unit of this invention according to claim 17 The input means for having two or more keys to which 1 or or more 2 alphabetic character was assigned, and inputting a character code, A beginning-of-a-sentence distinction means to distinguish the alphabetic character of a beginning of a sentence based on the list of the code corresponding to the key inputted from this input means, A capital letter conversion means to change and output the character code given to the character code of a capital letter, The output means for displaying the alphabetic character corresponding to the character code given at least, and outputting it, or [outputting the character code outputted to said output means according to the distinction result by the above-mentioned beginning-of-a-sentence distinction means through said capital letter conversion means] -- or it is characterized by whether to output as it is and providing the means for switching to switch. Since it is constituted as above, the beginning of a sentence of the inputted sentence is detected automatically, and the alphabetic character of this beginning of a sentence will be automatically made into a capital letter, and will be outputted.

[0025] The alphabetic character input unit of this invention according to claim 18 A dictionary means by which the input-statement character, the candidate alphabetic character of an input string and a conversion result, or the candidate character string was matched and memorized, Two or more keys to which two or more alphabetic characters were assigned, and the conversion / next candidate key for directing a transliteration, The input means for inputting an alphabetic character or a character string including the definite key for making a conversion result decide, A transliteration means to search said dictionary means, to ask for a candidate alphabetic character or a candidate character string, and to send out this candidate alphabetic character or a candidate character string about the alphabetic character corresponding to the key inputted from said input means, or the inputted character string of two or more key correspondences, A beginning-of-a-sentence distinction means to distinguish the alphabetic character of a beginning of a sentence based on the list of the code corresponding to the key inputted from said input means, and the code of the conversion result by said transliteration means, A capital letter conversion means to change and output the character code given to the character code of a capital letter, The output means for displaying the alphabetic character corresponding to the character code given at least, and outputting it, or [outputting the character code outputted to said output means according to the distinction result by the above-mentioned beginning-of-a-sentence distinction means through said capital letter conversion means] -- or it is characterized by whether to output as it is and providing the means for switching to switch. Since it is constituted as above, if the key to which two or more alphabetic characters were assigned is operated and conversion / next candidate key is operated When a dictionary means is searched and it can ask for a candidate alphabetic character or a candidate character string about the alphabetic character corresponding to the inputted key, or the inputted character string of two or more key correspondences The beginning of a sentence of the sentence by this candidate alphabetic character or the candidate character string is detected automatically, and the alphabetic character of this beginning of a sentence will be automatically made into a capital letter, and will be outputted.

[0026] When 1 or two or more space codes have a beginning-of-a-sentence distinction means before the alphabetic character concerned, or there is a line feed code and a period code is before that with the alphabetic character input unit of this invention according to claim 19, it is characterized by judging that the alphabetic character concerned is an initial character. By this, the input of a period is made, the alphabetic character of the beginning after line feed or the input of a period is made, and the alphabetic character of the beginning after 1 or two or more tooth-space inputs will be made into a capital letter, and will be outputted.

[0027] In the alphabetic character input unit of this invention according to claim 20, it is characterized by assigning the kana alphabetic character to two or more keys of an input means. Since it is constituted as above, the alphabetic character input unit concerning a Japanese input is constituted.

[0028] In the alphabetic character input device of this invention according to claim 21, it is characterized by assigning the alpha character to two or more keys of an input means. Since it is constituted as above, the alphabetic character input unit concerning an alphabet input is constituted.

[0029] The portable wireless telephone of this invention according to claim 22 equips claim 1 thru/or any 1 term of 21 with the alphabetic character input unit of a publication. By this, an alphabetic character input will be attained in a portable wireless telephone, and are recording of a text and messaging with a partner can be performed using a portable wireless telephone.

[0030]

[Embodiment of the Invention] The alphabetic character input unit applied to the gestalt of operation of this invention with reference to an accompanying drawing below is explained. The explanation which gives the same sign to the same component and overlaps in each description of drawing is omitted. The front view of the portable wireless telephone with which the alphabetic character input unit concerning the gestalt of operation of this invention was applied to drawing 1 is shown. If a hand set 101 consists of a case of the shape of a little flat rectangular parallelepiped and it applies to the lower part from the center of a front face, the ten key (dialing key) 103 which consists of a key of four-line three trains is formed, and the display 102 for displaying information, such as an alphabetic character and a notation, is formed in the upper part. Moreover, receiver section 104A for hearing the voice sent is prepared above the display 102, and transmission section 105A for inputting voice is further prepared in the lower part location of a ten key 103.

[0031] The internal configuration of the above-mentioned portable wireless telephone is shown in drawing 2. The portable wireless telephone consists of speaking circuits 4 which send and receive a sound signal between this transceiver section 3, and an earphone 104 and a telephone transmitter 105. [the controller 1 which controls each part, the input section 2 for inputting information, the antenna 5 which performs transmission and reception of an electric wave, the transceiver section 3 which are connected to this antenna 5, and transmit and receive a signal, and] An earphone 104 and a telephone transmitter 105 correspond to receiver section 104A of drawing 1, and transmission section 105A, respectively. The controller 1 consists of a message control section 6 for performing control about a message, and the character input/output section 7 which performs character input/output processing based on the input from the input section 2. The message control section 6 controls arrival-of-the-mail control according to the terminating signal which comes through the dispatch control and the antenna 5 according to an input, and the transceiver section 3 from the input section 2, adjustment of the amplification degree to a speaking circuit 4, etc. Moreover, the message control section 6 has the function which sends out the data made transmit through the transceiver section 3 the data sent from the character input/output section 7 and received to the character input/output section 7. The mode change-over switch which switches the mode of operation as telephone and the actuation as an alphabetic character input device is formed in the input section 2. A hook switch is sufficient as this mode change-over switch, and when using a hook switch, it serves as a mode of operation as an alphabetic character input unit at the time of on hook.

[0032] The block diagram when the portable wireless telephone of drawing 1 becomes a mode of operation as an alphabetic character input unit is shown in drawing 3. This configuration is a part which consists of the input section 2 and the character input/output section 7 in drawing 2. The keyboard 11 for an alphabetic character input device to input an alphabetic character etc. and the input-control section 12 which incorporates the information on the key stroke in a keyboard 11, and is sent out to the CC section 13, The word dictionary 14 which is a dictionary means 310 by which the CC section 13 which carries out generalization control of each part of an alphabetic character input unit, and an input-statement character, the candidate alphabetic character of an input string and a conversion result or a candidate character string was matched and memorized, The dictionary retrieval section 15 which obtains the candidate alphabetic character or candidate character string which corresponds with reference to the word dictionary 14 about the input-statement character or input string given from the CC section 13, The display 16 which consists of LCD as which information, such as an alphabetic character, is displayed, and the display and control section 17 which performs control for making a display 16 display a candidate alphabetic character or a candidate character string on the bottom of control of the CC section 13 are provided. Two or more kana alphabetic characters are assigned to several character each key of the ten key 103 of a keyboard 11 every. that is, five characters of the “**” line of the Japanese kana syllabary assign the “1” key of the numerical keypad of arrangement of the usual dialing key -- having -- the “2” keys -- the Japanese kana syllabary -- “ -- it is -- five characters of” line are assigned and the kana alphabetic character is assigned by the “0” keys like the

following. "8 [however,]" key -- "**" and "**" -- "-- " is assigned and "**", "**", "**", and "--" are assigned to the "0" keys. Moreover, the "*" key is used as conversion / next candidate key, and let the "#" key be a definite key. Two or more keys to which, as for the keyboard 11, two or more kana alphabetic characters were assigned in the above, It is the input means 300 for inputting an alphabetic character or a character string including the conversion / next candidate key for directing a transliteration, and the definite key for making a conversion result decide. A display 16 It is the output means 330 for displaying the candidate alphabetic character or candidate character string of a conversion result at least, and outputting it. The CC section 13 and the dictionary retrieval section 15 About the alphabetic character corresponding to the key inputted from the input means 300, or the inputted character string of two or more key correspondences The above-mentioned dictionary means 310 is searched, it asks for a candidate alphabetic character or a candidate character string, and a transliteration means 320 to send out this candidate alphabetic character or a candidate character string to the above-mentioned output means 330 is constituted.

[0033] The configuration of the above-mentioned keyboard 11 is shown in drawing 4 . The key matrix 10 is established corresponding to each key of a ten key 103, the electrical potential difference of 5V is always given to one contact of each switch of the key matrix 10 through a pull-up resistor and direction Rhine Out0-Out3 of a low (row), and the endpoint in direction Rhine Out0-Out3 of a low has resulted to the input-control section 12. Moreover, direction Rhine M0-M2 of a column (column) was connected to the contact of another side of each switch of the key matrix 10, and the endpoint in direction Rhine M0-M2 of a column has resulted to the input-control section 12.

[0034] On the other hand, the input-control section 12 is constituted as shown in drawing 5 . the control section 20 and timer 21 with which the input-control section 12 controls the whole, the memory table 22, and memory (MEM2) -- 23 and memory (MEM1) -- it is constituted by 24 and latches 25 and 26. Latch 25 is a circuit which latches the drive signal over direction Rhine M0-M2 of a column sent out from a control section 20, and is a circuit which latch 26 incorporates the signal of direction Rhine Out0-Out3 of a low, and is latched. The timer 21 is formed that the chattering generated at the time of a key stroke should be removed, and in order to read a key stroke into a duplex, it notifies predetermined time spacing (1mS) to a control section 20. The drive signal outputted to the latch 25 is set to memory 23, and the detecting signal then held at the latch 26 is set to memory 24. It seems that data for the memory table 22 to specify the operated key are stored, and the contents are shown in drawing 6 . That is, three patterns with which the data set to memory 23 make one set M2-M0 of bottom of MEM2 3 column at each time of the set value "0" of MEM2 of drawing 6 , "1", and "2" correspond, respectively, and being set to latch 25 is shown. Therefore, if either of three patterns on a par with the longitudinal direction which makes one set M2-M0 of bottom of MEM2 3 column is set to latch 25 Corresponding to this, one of the figures of the set value "0" in MEM2 of drawing 6 , "1", and "2" is set to memory 23, and this is received. For latch 26 Either of four patterns which make one set Out3-Out1 on a par with the longitudinal direction of right 4 column of MEM1 of drawing 6 is set, and this value is set to memory 24. For this reason, the figure of the key by which the figure of the location of the intersection of the set value "0" of MEM2, "1" or, and "2" was operated will be shown. [either of four patterns on a par with the longitudinal direction of MEM1 of drawing 6 R> 6 and] For example, if "1" is set to memory 23 and "1011" is set to memory 24, the code which shows the "5" keys will be outputted from the memory table 22. At this time, latch 25 is shown that "101 (M2-M0=)" was set.

[0035] Since a control section 20 performs key reading by the program of the flow chart shown in drawing 7 , actuation of a control section 20 is explained according to this flow chart. First, latch 25 is made to latch a signal that "0" should be outputted to all direction Rhine M0-M2 of a column (S1), and it supervises that "0" appears in either of direction Rhine Out0-Out3 of a low based on the signal latched to latch 26 (S2). If "0" appears, with reference to a timer 21, the signal of the waiting for 1mS (S3) and direction Rhine Out0-Out3 of a low will be incorporated from latch 26, and it will set to memory 24 (S4). Furthermore, with reference to a timer 21, the signal of the waiting for 1mS (S5) and direction Rhine Out0-Out3 of a low is incorporated from latch 26, and it detects whether it is equal to the contents already set to memory 24 (S6). It is here, and when not equal, it returns to step S2 again, and actuation is continued. On the other hand, when the 1st time and the 2nd reading result are equal While making latch 25 latch a signal "110 (=M2M1M0)" that "0" should be outputted only to direction Rhine M0 of a column "0" is set to memory 23 (S7), and it detects whether "0" is in either of the signals of direction Rhine Out0-Out3 of a low latched to latch 26 (S8). That is, if either of four keys connected to direction Rhine M0 of a column of drawing 4 is operated when "0" is outputted only to direction Rhine M0 of a column, "0" will appear in either of the signals of direction Rhine Out0-Out3 of a low. Here, if

there is "no 0" in all of the signal of direction Rhine Out0-Out3 of a low, while making latch 25 latch a signal "101" that "0" should be outputted only to direction Rhine M1 of a column, it detects whether "0" is in either of the signals of direction Rhine Out0-Out3 of a low which sets "1" to memory 23 and is latched to (S9) and latch 26 (S10). That is, if either of four keys connected to direction Rhine M1 of a column of drawing 4 is operated when "0" is outputted only to direction Rhine M1 of a column, "0" will appear in either of the signals of direction Rhine Out0-Out3 of a low. Furthermore, if there is "no 0" in all of the signal of direction Rhine Out0-Out3 of a low, while making latch 25 latch a signal "011" here that "0" should be outputted only to direction Rhine M2 of a column "2" is set to memory 23 (S11), and it detects whether "0" is in either of the signals of direction Rhine Out0-Out3 of a low latched to latch 26 (S12). That is, if either of four keys connected to direction Rhine M2 of a column of drawing 4 is operated when "0" is outputted only to direction Rhine M2 of a column, "0" will appear in either of the signals of direction Rhine Out0-Out3 of a low.

[0036] If "0" does not appear as a result of the above processing, without neither of the cases requiring the signal of direction Rhine Out0-Out3 of a low If it returns to step S1, actuation is continued and "0" appears at either of the signals of direction Rhine Out0-Out3 of a low in one case of the above-mentioned steps S8, S10, and S12 The signal of direction Rhine Out0-Out3 of a low is incorporated from latch 26, and it sets to memory 24 (S13). Next, an output is directed on the memory table 22, retrieval of the memory table 22 is performed based on the signal set to these result memories 23 and 24 (S14), and a control section 20 sends out the code of the key outputted from the memory table 22 to the CC section 13. Next, latch 25 is made to latch a signal that "0" should be outputted to all direction Rhine M0-M2 of a column (S15). It detects whether all direction Rhine Out0-Out3 of a low was set to "1" (S16). (did it restore?) If it will detect whether all direction Rhine Out0-Out3 of a low was set to "1" after progress of 1mS (S17) with reference to the timer 21 after detection if oar "1" is obtained (S18), and (did it restore?) oar "1" is obtained, it will return to step S1 and actuation will be continued. The code (for example, code corresponding to a figure) which shows whether which key of a ten key 103 was operated as mentioned above is sent out to the CC section 13.

[0037] The detail configuration of the display and control section 17 of the above-mentioned alphabetic character input unit is shown in drawing 8 . The display and control section 17 consists of character location memory 34 for memorizing the alphabetic character font memory 31 the character font (character pattern) was remembered to be, the character-font expansion section 32 which develops the font of this alphabetic character font memory 31 to an image memory 33 by control of the CC section 13, the image (bit map) memory 33 which holds the image data displayed on an indicating equipment (LCD) 16 by the bit map, and display font data (character code) on display with a display position.

[0038] The location data (address) of display font data, display-position data, an expansion initiation indication signal, and the character location memory 34 are given to the above-mentioned display and control section 17 from the CC section 13. That is, with an expansion initiation indication signal, by sending display font data, the character-font expansion section 32 takes out the display font corresponding to the display font data which accessed the alphabetic character font memory 31 and was given, and stores it in the correspondence location of an image memory 33 based on display-position data (coordinate of an image memory 33). Thereby, since the data location of the image memory 33 is matched with the pixel of the screen of the LCD indicating equipment 16 by 1 to 1, the pixel data of the display font developed by the location of relevance are memorized. On the other hand, it memorizes in the location of the location data with which display font data and display-position data are sent to the character location memory 34 from the CC section 13. The CC section 13 can read this using a lead signal, can read data (display font data) on display with the display-position data, and can process transmitting to other terminals through the message control section 6, the transceiver section 3, and the antenna 5 of drawing 2 etc.

[0039] The detail configuration of the dictionary retrieval section 15 of the above-mentioned alphabetic character input unit is shown in drawing 9 . The dictionary retrieval section 15 consists of retrieval result alphabetic character output buffers 43 for holding the code of the control section 40 which carries out generalization control of this dictionary retrieval section 15 whole, the alphabetic character input buffer 41 which stores the code of the alphabetic character which it keyed, or a character string, the code pointer 42 used at the time of dictionary retrieval of the word dictionary 14, the candidate alphabetic character obtained as a result of dictionary retrieval, or a character string.

[0040] The contents memorized by the word dictionary 14 are shown in drawing 10 . That is, corresponding to the code of the figure by actuation of a ten key 103, attribute information, such as an alphabetic character with the alphabetic character in a kana or a character string, and the kanji or a

character string and a part of speech, a location, and time amount, and the dictionary information which consists of information on other are matched and memorized. More specifically, the configuration of the word dictionary 14 is constituted as shown in drawing 13 from drawing 11. First, the word dictionary 14 consists of blocks classified in the number of alphabetic characters as it is shown in drawing 11. Each block corresponding to the number of alphabetic characters consists of two or more branches corresponding to the digit string of the number of alphabetic characters concerned as it is shown in drawing 12. Here, two or more branches corresponding to the digit string of five characters exist in the block whose number of alphabetic characters is five characters, the branch corresponding to the digit string in it "41281" is specified, and the predetermined number character is shown by "*" in other branches. Furthermore, the interior of the branch corresponding to a digit string "41281" is shown in drawing 13. In the branch, the table corresponding to SOS (00) which shows the head of the candidate corresponding to the table (therefore -- the case where a consecutiveness figure is with (1) and (8) -- two tables) corresponding to (9), and a digit string in case there is no consecutiveness figure is contained from the consecutiveness figure in the case of existing (0). The consecutiveness figure of correspondence, the pointer NTP of degree table, and the pointer NBP of degree branch are set to the table corresponding to (9) from the consecutiveness figure (0). On the other hand on the table corresponding to SOS (00) The code SOS which shows the head of a candidate (that is, it corresponds to a digit string "41281" in this example) in case there is no consecutiveness figure (00) The code EOB (FF) which shows termination of the code EOS (FF) which shows termination of an alphabetic character or character string code Str1 - Strn (n candidate is expressed with character code from 1 to n), and candidate alphabetic character or a candidate character string code, and a branch is set. When there are two or more candidates, the code SOS (00) in which a candidate's head is shown is registered also among two or more candidates. When making attribute information memorize, it is each candidate's character string code Str1 - Strn, next is set with the sign which shows that it is attribute information. [0041] As mentioned above, two or more candidate alphabetic characters or candidate character strings exist in 1 branch, because two or more kana alphabetic characters were assigned [not only according to a homonym existing but] to one key like the usual Japanese word processor. For example, the case where the "1" key and the "2" keys are operated continuously -- a "*" line -- " -- it is -- since it is the input of the character string of "line, "red (dirt)", "autumn (vacancy)", "a pond (go)", "a bucket (set) etc.", etc. exist as a candidate character string. In the case of the digit string "41281" of the instantiation to drawing 13, "Tokyo (obtaining today)", "offer (**** today) etc.", etc. exist. In the above-mentioned example, the candidate of a contracted sound, the candidate of dulness, the candidate of a p-sound, etc. are transposed to Kiyone, and it has dictionary-ized so that clearly.

[0042] Since the control section 40 of the dictionary retrieval section 15 shown in drawing 9 performs retrieval processing of the word dictionary 14 by the program of the flow chart shown in drawing 14, it explains actuation of a control section 40 according to this flow chart. A control section 40 clears the alphabetic character input buffer 41 (S21), and it waits for the code (code of a numerical keypad) of an input-statement character or an input string to come (S22). An operator shows ST1 of drawing 15 in this example -- as -- " -- * -- obtaining -- today -- " -- it considers as an input-statement character. Then, an operator will operate the correspondence key of the ten key 103 of a portable wireless telephone. In the ten key 103 of this drawing 15, it differs in the ten key 103 of drawing 1, a kana alphabetic character is written by the keytop itself which has round four corners, and, moreover, the kana alphabetic character serves as katakana instead of a hiragana. Even if this character input unit is the ten key 103 of the gestalt of operation of drawing 1, and it is the ten key 103 of this drawing 15, it shows that a suitable input is possible. The numerical keypad of a ten key 103 is operated with "41281", as shown in ST2 of drawing 15. An operator shows that it inputted by asking for the kana alphabetic character enclosed with the frame among the kana alphabetic characters corresponding to "41281" of ST2.

[0043] Then, the code corresponding to the numerical keypad concerning actuation is obtained by actuation of the input-control section 12 explained in drawing 7, and the code train corresponding to the above "41281" is stored in the alphabetic character input buffer 41. Next, an operator operates the "*" key which are conversion / next candidate key in quest of conversion, as shown in ST3 of drawing 15. By actuation of the input-control section 12 explained in drawing 7 also about the this "*" key, it is changed into a code and sent out to the CC section 13. The CC section 13 which received this sends out a retrieval start signal to the control section 40 of drawing 9. Then, as shown in drawing 14, the control section (S23) 40 which was supervising whether it was a retrieval start resets the code pointer 42 (S24), and makes a data selector signal a set condition (S25). Next, a control section 40 takes out

the code stored in the alphabetic character input buffer 41 from a head, and begins retrieval from the block with one alphabetic character of the word dictionary 14. Since the technique of retrieval is the same also about the figure of what position, here explains from the retrieval in the block with three alphabetic characters.

[0044] The processing from the retrieval in the block with three alphabetic characters is shown in drawing 16. According to a digit string "412", the table of the address "3F0F" of the block with three alphabetic characters is reached. The consecutiveness figure of this table is "1", and since it differs from the 4th figure "8" of the digit string "41281" stored in the alphabetic character input buffer 41, the following table is searched based on NTP. Here, since only the candidate whose figure following a digit string "412" is "1", and the candidate who is "8" exist, the consecutiveness figure can be searching the table of "8" instantly. usually, a consecutiveness figure -- the table of "1", for the table of "2", and its degree, a consecutiveness figure is [the degree of the table of "1" / a consecutiveness figure] "3" ... as -- it carries out and a consecutiveness figure reaches the table of "8."

[0045] If a consecutiveness figure is in agreement, based on NBP of this table, the 1st table of a branch with four alphabetic characters "4128" will be reached. On the table here, a consecutiveness figure is "1" and it is in agreement with the 5th figure "1" of the digit string "41281" stored in the alphabetic character input buffer 41. If a consecutiveness figure is in agreement, the table of the following branch "41281" will be reached based on NBP of this table. Here, since there is originally no consecutiveness figure stored in the alphabetic character input buffer 41, the table on which "00" is set to the area of a consecutiveness figure is searched. In the example of this drawing 16, it is premised on that there is no candidate with the figure which follows a digit string "41281" also in the word dictionary 14, i.e., there is no table, and the table of the address "98AC" with which "00 (=SOS)" is immediately set to the area of a consecutiveness figure is reached from the table of a branch "4128."

[0046] In the example of drawing 16, "Tokyo" is set to the 1st candidate character string, and the code of "Tokyo" is read corresponding to the output value "0" of the code pointer 42. The above processing is equivalent to processing of the loop formation of steps S26, S27, and S28 from "retrieval" of step S25 in drawing 14. Also when directing and reading each candidate alphabetic character, stepping of the code pointer 42 in step 27 corresponds in the target table, while corresponding, when retrieving the table in drawing 16 sequentially. Therefore, the retrieval of a candidate alphabetic character currently performed in drawing 16 in practice is equivalent to the case where the word dictionary 14 shown in drawing 10 is being searched. In addition, although "Tokyo" was obtained in this example If the candidate alphabetic character corresponding to the inputted digit string is not memorized in the word dictionary 14 When a NEXT signal is given to the code pointer 42, stepping of the value is carried out (S27), the loop formation from step S28 to step S26 is repeated and a candidate alphabetic character or a candidate character string finally cannot be detected, in step S28, it branches to YES. That is, an END signal is returned from the code pointer 42. Then, a control section 40 sends out "he has no relevance" to the CC section 13 using retrieval result information. The CC section 13 which received "he has no relevance" displays the purport which sends out the character font of "having no relevance" to a display and control section 17, and does not have the corresponding candidate on the LCD display 16 (S29).

[0047] The code of "Tokyo" obtained as mentioned above is outputted to the retrieval result alphabetic character output buffer 43 (S30). The notice of a result output is given to the CC section 13 using retrieval result information, and the code of "Tokyo" is incorporated by the CC section 13 from the retrieval result alphabetic character output buffer 43, is further sent to a display and control section 17, it is carried out as it was explained in explanation of drawing 8, and the display in a display (LCD) 16 is presented with it. That is, "Tokyo" is displayed on a display (LCD) 16. The control section 40 of the dictionary retrieval section 15 is supervising actuation of a definite key, or actuation of a next candidate key (S31, S32). Actuation of a definite key or actuation of a next candidate key is sent out from the input-control section 12 like the case of actuation of the above-mentioned conversion key to the CC section 13.

[0048] In the example of drawing 15, since "Tokyo" is a desired alphabetic character, as shown in ST4, the definite key is operated. The CC section 13 obtains the code of a definite key, and makes a retrieval start signal change inactively. In response, the control section 40 of the dictionary retrieval section 15 branches from step 31 to YES, and makes the above-mentioned candidate alphabetic character decide. in addition, the word dictionary 14 -- "41281" -- corresponding -- a hiragana -- " -- ** -- obtaining -- today -- ", when "Tokyo" of the kanji is stored in order A next candidate key is operated to a display. it is shown to ST5 of drawing 15 by the parenthesis -- as -- first -- a hiragana -- " -- ** -- obtaining --

today -- " -- This gives a NEXT signal to the code pointer 42, stepping of the value is carried out (S27), the code of "Tokyo" of the kanji of the next candidate is obtained, and it progresses to S30 from step S26. Also in this case, since "Tokyo" of the kanji is a desired alphabetic character, as shown in ST4, a definite key is operated. Processing will be performed by subsequent processings like the above-mentioned.

[0049] Since two or more kana alphabetic characters are assigned to each key and the alphabetic character input unit applied to the gestalt of the 1st operation as above is equipped with conversion / next candidate key, and a definite key, it can input appropriately the candidate character string which consists of combination of the kana character string assigned to the candidate alphabetic character corresponding to the kana alphabetic character assigned to the operated key, or two or more keys which were operated, and can choose it. That is, it is suitable for an information terminal with few keys.

[0050] If the "*" key which are conversion / next candidate key is not operated with the gestalt of implementation of the above 1st, since any display is not made by the display 102, it does not know whether to be that the right key stroke is made, and operability is not necessarily good. So, with the gestalt of the 2nd operation, the program corresponding to the flow chart of drawing 14 with which the control section 40 of the dictionary retrieval section 15 is equipped is replaced with the program corresponding to the flow chart of drawing 17. That is, in step S22, a control section 40 waits for the code (code of a numerical keypad) of an input-statement character or an input string to come. If the numerical keypad of a ten key 103 is operated, the CC section 13 will be transmitted to the display-control section 17, as shown in step S100 of drawing 17, while it stores the code corresponding to this in the alphabetic character input buffer 41. Thus, if a ten key 103 is operated, the dictionary retrieval section 15 (control section 40) will detect the code (code of a figure) corresponding to this key, and will function as a code sending-out means with which sends out to a display and control section 17, and a display is presented. In a display and control section 17, this is patternized and the figure which writes in and corresponds to an image memory 33 is displayed. Although the control section 40 is supervising actuation of the "*" key which are conversion / next candidate key (S23), if this code corresponding to "*" key does not come, it returns to step S22 and waits for arrival of the code (code of a numerical keypad) of an input-statement character or an input string.

[0051] "-- ** -- obtaining -- today -- ", when it corresponds and keys with "41281" The actuation is [that "4", "41", ..., "41281" and the figure corresponding to the operated key increase, and is displayed as shown in drawing 18 for every actuation of each key, and the key input is received, and] infallible, that is, -- " -- ** -- obtaining -- today -- " -- it can check that the numerical keypad to which each kana alphabetic character is assigned is operated. When the "*" key which are conversion / next candidate key is operated, the transliteration using the word dictionary 14 is performed like the gestalt of the 1st operation, the code of the candidate alphabetic character which corresponds from the word dictionary 14 is read, and this is replaced with the display of the above-mentioned digit string "41281", and is displayed. in addition, the 1st candidate character string of the table corresponding to the digit string "41281" of the word dictionary 14 at the example of drawing 18 -- " -- ** -- obtaining -- today -- " -- having become a hiragana notation is shown.

[0052] The flow chart corresponding to the program with which the control section 40 of the dictionary retrieval section 15 in the alphabetic character input device concerning the gestalt of the 3rd operation equips drawing 19 is shown. Also in the gestalt of this operation, a control section 40 waits for the code (code of a numerical keypad) of an input-statement character or an input string to come in step S22. If the numerical keypad of a ten key 103 is operated, the CC section 13 will transmit the line alphabetic character corresponding to a figure to a display and control section 17, as shown in S110 of drawing 19, while storing the code corresponding to this in the alphabetic character input buffer 41. That is, the CC section 13 has the translation table of numeric code and a line alphabetic character, obtains a line alphabetic character from numeric code, and transmits it to a display and control section 17. In a display and control section 17, this is patternized and the alphabetic character which writes in and corresponds to an image memory 33 is displayed. if the above-mentioned table is explained in full detail -- the code of "1", and the code of "*" and the code of "2" -- " -- it is -- " -- a code and the code of "3" -- " -- they are the code of ", ..., the table on which the code of "0" and the code of "*" were matched.

[0053] Although the control section 40 is supervising actuation of the "*" key which are conversion / next candidate key (S23), if this code corresponding to "*" key does not come, it returns to step S22 and waits for arrival of the code (code of a numerical keypad) of an input-statement character or an input string, as shown in drawing 19. the case of the gestalt of the 1st operation -- the same -- " -- ** -- obtaining -- today -- ", when it corresponds and keys with "41281" As shown in drawing 20, for

every actuation of each key "*", "****", ..., "***** and **", the line alphabetic character corresponding to the operated key increasing, and being displayed, and the key input being received and its actuation are infallible -- things -- that is, -- "-- ** -- obtaining -- today -- " -- it can check that the key to which each kana alphabetic character is assigned is operated. When the "*" key which are conversion / next candidate key is operated, the transliteration using the word dictionary 14 is performed like the gestalt of the 1st operation, the code of the candidate alphabetic character which corresponds from the word dictionary 14 is read, and this is replaced with the display of a top Noriyuki character string "***** and **", and is displayed. in addition, the 1st candidate character string of the table corresponding to the digit string "41281" of the word dictionary 14 at the example of drawing 20 -- "-- ** -- obtaining -- today -- " -- having become a hiragana notation is shown.

[0054] In the gestalt of implementation of the above 3rd, the modification of the gestalt of the 3rd operation which displays a line alphabetic character in Roman alphabet is shown in drawing 21. In the case of this modification, on the table with which the CC section 13 is equipped, the code of "1", the code of "A" and the code of "2", the code of "K" and the code of "3", the code of "S", ... and the code of "O", and the code of "W" are matched. therefore -- "-- ** -- obtaining -- today -- ", when it corresponds and keys with "41281" As shown in drawing 21, for every actuation of each key "T", "TA", ..., "TAKYA", the line alphabetic character corresponding to the operated key increasing, and being displayed, and the key input being received and its actuation are infallible -- things -- that is, -- "-- ** -- obtaining -- today -- " -- it can check that the key to which each kana alphabetic character is assigned is operated. in addition, the memory table 22 with which the input-control section 12 shown in drawing 5 is equipped as other configurations although changed with the gestalt of this 3rd operation on the table with which the CC section 13 is equipped -- a hiragana -- the alphabetic character of a line name -- or it is also possible to obtain the alphabetic character of a line name in Roman alphabet. In this case, do not make a figure, a digit string and a candidate alphabetic character, or a candidate character string correspond, make the alphabetic character, the character string and the candidate alphabetic character, or candidate character string of a line name of a hiragana correspond, or the alphabetic character, the character string and the candidate alphabetic character, or candidate character string of a line name of a Roman alphabet is made to correspond, and the word dictionary 14 also constitutes. Thus, even if constituted, of course, that it can check that the key input is received and that the actuation is infallible can obtain a suitable alphabetic character and a character string in the input by the small number of keys like the gestalt of the 1st operation.

[0055] The flow chart corresponding to the program with which the control section 40 of the dictionary retrieval section 15 in the alphabetic character input device concerning the gestalt of the 4th operation equips drawing 22 is shown. With the gestalt of this operation, without supervising actuation of the "*" key which are conversion / next candidate key, a control section 40 resets the code pointer 42 (S24), makes a data selector signal a set condition (S25), takes out further the code stored in the alphabetic character input buffer 41 from a head, and begins retrieval from the block with one alphabetic character of the word dictionary 14.

[0056] the gestalt of this 4th operation -- setting -- "-- ** -- obtaining -- today -- " -- when it corresponds and keys with "41281", as shown in drawing 23, "**", "**", "standby", ..., "Tokyo" are displayed for every actuation of each key. That is, the 1st candidate of the table of the candidate alphabetic character corresponding to "4" of the word dictionary 14 is "**." The 1st candidate of the table of the candidate alphabetic character corresponding to "41" of the word dictionary 14 is "**." The 1st candidate of the table of the candidate alphabetic character corresponding to "412" of the word dictionary 14 is "standby." When the 1st candidate of the table of the candidate alphabetic character corresponding to "4128" of the word dictionary 14 is "leaving" and the 1st candidate of the table of the candidate alphabetic character corresponding to "41281" of the word dictionary 14 is "Tokyo" The candidate alphabetic character or candidate character string changed in above order is displayed without operating conversion / next candidate key in any way.

[0057] Unless conversion / next candidate key is operated, a display is presented with a current retrieval result (S33), it returns to step S22, and processing is continued. Moreover, when a purport without the corresponding candidate is displayed on the LCD display 16 (S29), it sets. Actuation of a definite key, or a conversion / next candidate key is detected (S34, S35), if these key strokes do not exist, it will return to step S22 and processing will be continued. The above-mentioned step S34, Or in S35, if a definite key, or conversion / next candidate key is operated, it will be made to shift to exception processing. For this reason, when the gestalt of this example does not have the candidate alphabetic character or candidate character string corresponding to a figure in the middle of an input, it

will have a configuration corresponding to unjust actuation in which a definite key, or conversion / next candidate key is operated.

[0058] In addition, since it avoids becoming having no candidate alphabetic character in the middle of an input, the alphabetic character of the line name concerned can also be assigned to several characters each of the word dictionary 14. In this case, as a result of conversion, as shown in drawing 20, the alphabetic character of a line name is displayed. Moreover, in order to show that it is as a result of [when not operating conversion / next candidate key] conversion, the display result of the modification which set the 1st original candidate's hiragana code is shown to the 1st candidate of the table of the candidate alphabetic character corresponding to the figure or digit string of the word dictionary 14 at drawing 24. That is, the 1st candidate of the table of the candidate alphabetic character corresponding to "4" of the word dictionary 14 is "**." the 1st candidate of the table of the candidate alphabetic character corresponding to "41" of the word dictionary 14 -- "-- it is -- it is -- " -- it is -- The 1st candidate of the table of the candidate alphabetic character corresponding to "412" of the word dictionary 14 is "good [**]." the 1st candidate of the table of the candidate alphabetic character corresponding to [the 1st candidate of the table of the candidate alphabetic character corresponding to "4128" of the word dictionary 14 is "*****", and] "41281" of the word dictionary 14 -- "-- ** -- obtaining -- today -- " -- it is . thereby, when it keys with "41281", it is shown in drawing 24 for every actuation of each key -- as -- "**" -- "-- it is -- it is -- " -- "-- ** stylish" and ... "-- ** -- obtaining -- today -- " -- it is displayed. Thus, it is clear for a hiragana alphabetic character to be displayed according to a key stroke, and not to operate conversion / next candidate key, and it can know whether moreover it has inputted correctly.

[0059] Although only one conversion candidate was displayed, when there are two or more the candidate alphabetic characters or candidate character strings of conversion, with the gestalt of the 5th operation, these are expressed as the gestalt of each above-mentioned implementation a predetermined individual every. The important section of the flow chart corresponding to the program with which the control section 40 of the dictionary retrieval section 15 in the alphabetic character input device concerning the gestalt of the 5th operation equips drawing 25 is shown. With the gestalt of this 5th operation, steps S30-S32 of drawing 14 of the gestalt of the 1st operation and processing corresponding to S27 are performed, as shown in drawing 25. That is, when taking out a candidate from the word dictionary 14, the candidate to the existing predetermined individual is taken out, and it outputs to the retrieval result alphabetic character output buffer 43 with a selection figure (S30-A). Thereby, "Tokyo", "offer", "Tokyu", and "****" are displayed on the display screen of a display 102 with the selection figures 1-4 so that drawing 26 may show caudad.

[0060] A control section 40 makes this candidate alphabetic character decide the input of a selection figure, when it is inputted, waiting (S31-A) and. Moreover, if there is no input of a selection figure, actuation of a next candidate key will be detected (S32) and a next candidate key will be operated, stepping of the code pointer 42 will be carried out [above-mentioned] several predetermined candidate minutes (the example of above-mentioned drawing 26 four pieces) (S27-A), and it will progress to retrieval of other candidates. Thus, with the gestalt of the 5th operation, since these are indicated by coincidence and selection is presented when two or more candidates exist, it is effective in the ability to decide a candidate alphabetic character quickly.

[0061] The block diagram of the alphabetic character input unit concerning the gestalt of the 6th operation is shown in drawing 27. With the gestalt of this operation, the touch panel 50 stuck on the screen of an indicating equipment 16 is formed, and input-control section 12-A detects the actuation input coordinate value from this touch panel 50. That is, as shown in a display 16 in the screen of the considerable display 102 at drawing 29, the transparence sheet 51 is stuck. A transparent electrode 52 is formed in the lower predetermined location of the transparence sheet 51; and the transparence counterelectrode 53 is formed in the location on the screen which counters a transparent electrode 52 through the different direction conductive rubber of transparence etc. The transparence counterelectrode 53 which counters the transparent electrode 52 of the lower predetermined location of the transparence sheet 51, and a transparent electrode 52 Four pieces are prepared as shown in drawing. To these It carried out as [explained / like the key matrix explained in drawing 4, / direction Rhine of a column and direction Rhine of a low were connected, and / from drawing 4 / in drawing 7], and input-control section 12-A has detected whether which location was operated. That is, input-control section 12-A constitutes a location detection means 55 to detect the input actuated valve position in a touch panel 50.

[0062] The flow chart corresponding to the program with which the control section 40 of the dictionary

retrieval section 15 in the alphabetic character input device concerning the gestalt of the 6th operation equips drawing 28 is shown. With the gestalt of this operation, steps S30-S32 of drawing 14 of the gestalt of the 1st operation and processing corresponding to S27 are performed, as shown in drawing 28. That is, when taking out a candidate from the word dictionary 14, the candidate to the existing predetermined individual is taken out, and it outputs to the retrieval result alphabetic character output (for LCD display) buffer 43 with the alphabetic character (or "scrolling") of the "next candidate" (S30-A). Thereby, a display and control section 17 displays "Tokyo", "offer", "Tokyu", and the "next candidate" on the location of the transparent electrode 52 of the display screen of a display 102 so that drawing 29 may show caudad (S36). A control section 40 detects the actuated valve position in a touch panel 50 (S37), detects the candidate alphabetic character currently displayed by corresponding based on the coordinate of an actuated valve position (S38), and makes this candidate alphabetic character decide (S40). Thus, the dictionary retrieval section 15 functions as a definite means.

[0063] Moreover, when actuation of a next candidate key is detected, (S38) and the pointer for a display are changed (S39), stepping of the code pointer 42 is carried out [above-mentioned] several predetermined candidate minutes (the example of above-mentioned drawing 29 three pieces) (S27-A), and it progresses to retrieval of other candidates. That is, when it exists by advancing these by three pieces when [both] the pointer for displaying a candidate about the candidate character string of the table on which the word dictionary 14 corresponds, and the pointer for retrieval of the candidate alphabetic character out of the table of the word dictionary 14 are common, the following three candidates are taken out and it is displayed. Thus, with the gestalt of the 6th operation, when two or more candidates exist, since [with a touch panel 50] these are indicated by coincidence and it is selectable, it is effective in the ability to decide a candidate alphabetic character quickly certainly.

[0064] The keyboard 11 is equipped with cursor movement keys 61 and 62 and the elimination key 63 while displaying Cursor C for the alphabetic character input unit concerning the gestalt of each operation of this invention correcting an input-statement character etc., as shown in drawing 30. Here, in order to perform character representation for one line, although cursor movement keys 61 and 62 are constituted by the key of the pair of a longitudinal direction, when adopting the configuration which performs character representation of two or more lines, in addition to this, the cursor movement key of the pair of the vertical direction is prepared. The actuation information on cursor movement keys 61 and 62 is also detected by the input-control section 12, and is given via the CC section 13 to a display and control section 17. [as well as the actuation information on other keys explained by drawing 7 from drawing 4]

[0065] A display and control section 17 indicates the cursor C by migration per one-character viewing area about a cursor display at descending of a character representation field based on a cursor pointer. And a display and control section 17 is controlled by the program which shows a cursor pointer to the flow chart of drawing 31 based on the input of an alphabetic character, and the actuation information on a cursor movement key. That is, if arrival of a character code is detected (S41) and a character code comes, 1 stepping of the cursor pointer will be carried out (S42). By this, Cursor C moves forward by one character. Moreover, if arrival of the actuation information on a cursor movement key detects whether the cursor advance arose (S43) and actuation information does not come it when a character code does not come, it returns to step S41 and a monitor is continued, and if a cursor advance arises, a cursor pointer will be fluctuated according to the migration direction (S44). By this, Cursor C will move forward or retreat per one character. When correcting the alphabetic character of an incorrect input, it moves to the character position which should correct Cursor C by cursor movement keys 61 and 62, the elimination key 63 is operated and eliminated, and a right alphabetic character is inputted. In this case, although a display will not be performed with the gestalt of the 1st operation if it is not after operating conversion / next candidate key, in exception processing after displaying on the LCD display 16 a purport without the candidate to whom step S29 corresponds, like the gestalt of the 2nd operation, an input figure or an input digit string is displayed, and correction is guaranteed here. That is, in exception processing, the digit string set to the character string input buffer 41 is sent out to a display and control section 17. If conversion / next candidate key is operated after correction, processing after step S23 of the flow chart of drawing 14 will be performed.

[0066] The block diagram of the alphabetic character input unit concerning the gestalt of the 7th operation is shown in drawing 32. With the gestalt of this operation, retrieval SW(switch) 18 is again connected to the CC section 13, when the purport which does not have the corresponding candidate as a result of word dictionary retrieval is displayed on the LCD display 16, it can change about an input-statement character or an input string, and the directions to which conversion by dictionary retrieval is

made to carry out again can be given. That is, when a candidate alphabetic character or a candidate character string is not obtained, on condition that the above-mentioned re-degree retrieval SW18 is ON, the CC section 13 and the dictionary retrieval section 15 change about an input-statement character or an input string, and function as a modification means 60 into which it is made to change again. In addition, retrieval SW18 consists of registers instead of a mechanical switch again.

[0067] The flow chart corresponding to the program with which the control section 40 of the dictionary retrieval section 15 in the alphabetic character input device concerning the gestalt of the 7th operation equips drawing 33 is shown. With the gestalt of this operation, in retrieval processing of the word dictionary 14, a control section 40 resets retrieval SW18 again while clearing the alphabetic character input buffer 41 (S48), and it waits for the code (code of a numerical keypad) of an input-statement character or an input string to come (S22). The processing after this is the same as that of the gestalt of the 1st operation, and in step S29, when a purport without the corresponding candidate is displayed on the LCD display 16, it is different in that step S45 to the step S47 is processed.

[0068] That is, in step S29, when a purport without the corresponding candidate is displayed on the LCD display 16 next, turning on and off of retrieval SW18 is detected again (S45). At the time of the beginning, by reset in step S48, since it is off, it branches to NO, and the last one character (figure) is deleted (S46), retrieval SW18 is again set to ON (S47), and about the alphabetic character (figure) or alphabetic character (figure) train acquired as a result of deletion, in order to search the word dictionary 14, the processing from step S24 is repeated. Thus, by deleting one character at the tail end of a character string, being in agreement with the candidate alphabetic character which attached words, such as a particle, are deleted and is registered into the word dictionary 14 is expected. That is, automatic error-correction of an input string is performed by the gestalt of this operation.

[0069] In addition, when a purport without the candidate who corresponds in step S29 is displayed on the LCD display 16 in spite of modification of such a character string, since retrieval SW18 serves as ON again, in step S45, it branches to YES, and already progresses to exception processing. It is possible to carry out in this exception processing, as explained in drawing 30 and drawing 31, and to correct. Moreover, about whether the gestalt of this operation is functioned, when the input of special numbers (being the key input which is not usually used for example, "###?(?= figure) ? (=? figure) etc." etc.) is made from a keyboard 11, a setup is canceled and automatic error-correction does not carry out. Then, if automatic error-correction is needed, the same special number as the above can be inputted and an automatic correction function can be set to ON.

[0070] The block diagram of the alphabetic character input unit concerning the gestalt of the 8th operation is shown in drawing 34. With the gestalt of this operation, the error amendment table 70, memory (PMEM) 71, and memory (KMEM) 72 are connected to the CC section 13. The error amendment table 70 of the gestalt of this operation is a candidate table of the key which serves as an operation mistake in the case of a key stroke, and as shown in drawing 35, it is constituted. That is, corresponding to class [of numerical keypad] "1" - "0", the key (namely, key which approaches in arrangement) which may carry out an operation mistake is arranged in the high order of a probability. A figure candidate's ranking currently used for replacement is memorized by memory 71, and it is set to memory 72 what position of an input-statement character or an input string is replaced. When a candidate alphabetic character or a candidate character string is not obtained, the CC section 13 and the dictionary retrieval section 15 use the above-mentioned error amendment table 70, change about an input-statement character or an input string, and function as modification means 60-A into which it is made to change again.

[0071] The flow chart corresponding to the program with which the control section 40 of the dictionary retrieval section 15 in the alphabetic character input device concerning the gestalt of the 8th operation equips drawing 36 and drawing 37 is shown. With the gestalt of this operation, in retrieval processing of the word dictionary 14, a control section 40 clears memory (PMEM) 71 and memory (KMEM) 72 while clearing the alphabetic character input buffer 41 (S50), and it waits for the code (code of a numerical keypad) of an input-statement character or an input string to come (S22). The processing after this is the same as that of the gestalt of the 1st operation, and in step S29, when a purport without the corresponding candidate is displayed on the LCD display 16, it is different at the point which progresses to pre exception processing shown in drawing 37.

[0072] In pre exception processing shown in drawing 37, "1" increment of the value of memory 71 is carried out (S51), and it detects whether a candidate is shown in the error table 70 (S52). That is, it has detected whether there is any 1st candidate who should permute. Since there is a candidate at the beginning so that clearly from drawing 35, it branches to YES, "1" increment of the contents of

memory 72 is carried out (S54), and what the 1st of an input-statement character or an input string should be permuted for in this case is directed. And it detects whether the alphabetic character of the location directed by memory 72 exists in the alphabetic character input buffer 41 (S55). When the alphabetic character of one or more characters exists, the error amendment table 70 is searched, the alphabetic character of the location which the memory 72 in the character string input buffer 41 shows in the alphabetic character which searched the alphabetic character of correspondence (S56) and was obtained from the candidate ranking which the alphabetic character which memory 72 shows, and memory 71 show here is permuted, and the processing from step S24 of the flow chart of drawing 36 is continued. That is, the word dictionary 14 is searched about the character string obtained as a result of the permutation, and a candidate alphabetic character is obtained. If the above-mentioned result and a retrieval result are not obtained, pre exception processing is performed again and a permutation is performed about the next candidate. If the candidate of a certain character position dies, in step S52, it will branch to NO, memory 71 will be reset (S53), and "1" increment of the contents of memory 72 will be carried out (S54). Thereby, about the 2nd alphabetic character of an input string, a permutation is performed and it goes. It is possible to **, for permutation correction to be automatically carried out, when the key which approaches by the error of a key stroke is operated according to the gestalt of this operation, and to input a request. Thus, without obtaining a retrieval result, even if automatic replacement correction is performed, after the permutation of the alphabetic character of the last in a character string is completed, in step S55, it branches to NO, and exception processing is performed. [0073] It is possible to carry out in the above-mentioned exception processing, as explained in drawing 30 and drawing 31, and to correct. Moreover, about whether the gestalt of this operation is functioned, when the input of special numbers (being the key input which is not usually used for example, "###? (figure) ? (figure) etc." etc.) is made from a keyboard 11, a setup is canceled and permutation correction is not performed. Then, if permutation correction is needed, the same special number as the above can be inputted and an automatic replacement correction function can be set to ON. In addition, with the gestalt of this operation, although the permutation was performed from the head side of an input string, even if it performs a permutation from a tail, the same effectiveness is expectable.

[0074] The block diagram of the alphabetic character input unit concerning the gestalt of the 9th operation is shown in drawing 38. With the gestalt of this operation, the character range information table 75 is connected to the CC section 13, and as shown in this character range information table 75 at drawing 39, the range (can the kanji be treated even in a kana?) of the character which can be treated corresponding to the identification information (for example, telephone number) of a transmitting partner terminal is memorized beforehand. The CC section 13 constitutes the range information acquisition means 76 which acquires range information from the character range information table 75, and is passed to the dictionary retrieval section 15 which is a transliteration means.

[0075] By performing the program of the flow chart of drawing 40, the CC section 13 which is the range information acquisition means 76 acquires range information. That is, it detects whether there is any phase hand assignment (S61). With the gestalt of this operation, before becoming the mode of an alphabetic character input unit, by the special number, it directs to input by phase hand assignment, and the identification information (telephone number) of a partner terminal is inputted. The CC section 13 incorporates this (S62), and acquires the range information which shows the range of the character which can treat the destination terminal which searches the character range information table 75 and corresponds (S63). This acquired range information is memorized to the register with the above-mentioned identification information (telephone number) (S64). It progresses to the retrieval routine to the word dictionary 14 after this.

[0076] The flow chart corresponding to the program with which the control section 40 of the dictionary retrieval section 15 in the alphabetic character input device concerning the gestalt of the 9th operation equips drawing 41 is shown. Processing until it detects a candidate alphabetic character or a candidate character string in step S26 with the gestalt of this operation is equal to the gestalt of the 1st operation. However, if a candidate is detected, when it detects whether the kanji can be treated in a partner terminal with reference to the above-mentioned register (S60) and the kanji cannot be treated, the candidate of a kana code is chosen (S61). In this case, you may choose for an additional remark display of a kanji character code. thereby, when a partner terminal cannot treat the kanji, the candidate in a kana is chosen and displayed with the kanji of an additional remark notation if it is in the gestalt of the operation which carries out an additional remark notation.

[0077] The identification information of the partner terminal memorized by the character string code and the above-mentioned register from the character input/output section 7 to the message control section

6 as it was shown in drawing 2 , when it had and an input-statement character was decided which is the above is given, and transmission of call origination and data is performed through the transceiver section 3 and an antenna 5. Thus, the transliteration according to the capacity of a partner terminal is made, a suitable code is sent and processing does not become impossible at a partner terminal. In addition, when identification information without registration is inputted into the character range information table 75, it processes as what cannot treat the kanji. That is, it prevents that processing becomes impossible in a partner terminal by performing processing of a low function.

[0078] In addition, although considered as the range by the ability of the kanji to be treated with the gestalt of the 9th operation, others may have the partition of range, such as range to a Roman alphabet notation or the external character by the same kind, to a figure. It corresponds in these cases and the range information on a table is subdivided. thus, when carrying out (a ** -- it comes out so also with the gestalt of the 9th operation), the dictionary configuration doubled with processing of a low function is required. That is, a kana character code is prepared to the word same in addition to the candidate of the kanji. Moreover, the candidate of a figure and the candidate of a Roman alphabet notation are prepared, and dictionary-ization is performed.

[0079] Furthermore, with the gestalt of the 9th operation, although range information was prepared beforehand, the contents of this character range information table 75 can be updated. That is, by a special number etc., the contents of the character range information table 75 direct updating, and input the pair of phase hand identification information and range information. Thereby, the CC section 13 updates the contents of the character range information table 75. At the time of the same phase hand identification information, information is overwritten, and when it is new phase hand identification information, new registration is made. Furthermore, you may make it send out the range information which formed the pre-procedure at the time of the communication link with a partner terminal, and you may make it acquire range information with a DTMF signal, and the switched network acquired from the partner terminal using a control channel. Also by these cases, it is effective in the ability to transmit character strings, such as a message according to the capacity of a partner terminal.

[0080] Next, the gestalt of operation of the 10th of this invention is explained. It has the left translation key 65 for moving the cursor K which indicates the location of the alphabetic character inputted in a display 102, or a character string to be the mode key 64 for the portable wireless telephone with which the alphabetic character input unit concerning the gestalt of this operation was applied to choose two or more processing modes as the ten key 103 bottom as shown in drawing 42 , and the right translation key 66. The input of a predetermined special number may be made to substitute these keys for either of the ten keys 103. The mode key 64 is for calling the mode to hold one after another for every actuation, for example, this equipment has talk mode, data communication mode, alphabetic character input mode, telephone number register mode, fixed form sentence input mode, search mode, etc. When starting, it is talk mode, it becomes talk mode by one actuation of the mode key 64, and becomes data communication mode by one more actuation of the mode key 64, and the mode is changed for every actuation below, and if the mode key 64 is further operated when it is the last mode, it consists of initial states so that it may return to talk mode. If it continues operating the left translation key 65 or the right translation key 66 when the display of a multi-line is made by the display 102, as shown in drawing 42 , it can be made to continue and move to this line. That is, if it continues operating the right translation key 66 when Cursor K is located in the 1st line rightmost location for example, it will move to the 2nd line rightmost location from the 1st line leftmost location, and will move in the 2nd line leftmost location direction further. As explained using drawing 30 and drawing 31 , a display and control section 17 performs the display control of this cursor K by CC section 13A shown in drawing 43 incorporating keypad information through the input-control section 12, and giving this to a display and control section 17.

[0081] In the gestalt of this operation, the attribute of the alphabetic character concerning an input or a character string is specified, a suitable candidate alphabetic character or a candidate character string can be searched from the word dictionary 14, and desired words (kanji etc.) are obtained quickly. The configuration of the alphabetic character input unit concerning the gestalt of this operation is shown in drawing 43 . That is, a dictionary means 310 by which an input-statement character, the candidate alphabetic character of an input string and a conversion result or a candidate character string, and its attribute information were matched, and this alphabetic character input unit was memorized, Two or more keys to which two or more kana alphabetic characters were assigned, and the conversion / next candidate key for directing a transliteration, The input means 300 for inputting an alphabetic character or a character string, and required information including the definite key for making a conversion result

decide, The output means 330 for displaying the candidate alphabetic character or candidate character string of a conversion result at least, and outputting it, An attribute specification means 350 to specify the attribute of an input-statement character or an input string based on the information inputted from the above-mentioned input means 300, About the alphabetic character corresponding to the key inputted from the above-mentioned input means 300, or the inputted character string of two or more key correspondences, search the above-mentioned dictionary means 310 and it faces in quest of a candidate alphabetic character or a candidate character string. It asks for the candidate alphabetic character or candidate character string applicable to the attribute information specified by the above-mentioned attribute specification means 350, and transliteration means 320A which sends out this candidate alphabetic character or a candidate character string to the above-mentioned output means 330 is provided. The above-mentioned attribute specification means 350 is constituted by CC section 13A and the input word attribute storage section 19. The input word attribute storage section 19 is used in order to memorize the alphabetic character by which the current input is carried out, or the attribute information on a character string.

[0082] Some contents of the word dictionary 14 which constitutes the dictionary means 310 are shown in drawing 44 . That is, corresponding to the code of the figure by actuation of a ten key 103, an alphabetic character with the alphabetic character in a kana or a character string, the kanji, etc. or the candidate of a character string, an alphabetic character with the above-mentioned kanji etc., or the attribute information about the candidate of a character string is further memorized like the name of a place, the name of a person, and the corporate name. In this example, attribute information may be memorized two or more, although referred to as one to the candidate of an alphabetic character with the above-mentioned kanji etc., or a character string. For example, an attribute "the name of a place" is also an attribute "a location", and can apply an "action" as an attribute "general", for example, an attribute of "please give." The configuration on actual of this word dictionary 14 is as having explained using drawing 1313 from drawing 11 .

[0083] Moreover, since the equipment of the gestalt of this operation specifies an attribute, CC section 13A is equipped with memory as shown in drawing 45 and drawing 46 . The contents memory 77 of directions the contents of directions for acquiring two or more modes and attributes concerning processing of this equipment were matched and remembered to be is shown in drawing 45 . Here, if it corresponds to talk mode and data communication mode, "0" is set. It is shown that processing about an attribute is not performed, if it corresponds to alphabetic character input mode, "directions by key input" and registration are made, and it sets to alphabetic character input mode. If following this is shown and it corresponds to telephone number register mode, the input mode of the fixed form sentence 1, and the mode of retrieval 3 when attribute information is directly inputted by key input The jump place address "aaa" of the cursor location memory 78 etc. is set, and attribute information (the "name of a place", "corporate name", etc.) is set as they are in retrieval 1 and retrieval 2. P in drawing 45 is a pointer, it is shown whether which the mode is performed and it is shown in the example of this drawing 45 that telephone number register mode is performed.

[0084] Drawing 46 shows the cursor location memory 78 the alphabetic character which starts an input corresponding to the location of Cursor K, or the attribute information on a character string was matched and remembered to be. For example, in telephone number register mode, the jump place address aaa is obtained from the contents memory 77 of directions. or [that the location of Cursor K belongs to any of a "cursor coordinate" by flying to the address aaa of the cursor location memory 78] (x1 - x2 --) x3 - x4, x5 -x6, and x7 -x8 The coordinate of the field of the "identifier" of an input item, "affiliation", the "address", and the "telephone number" is expressed, respectively. It responds and it is specified any of a "name of a person", a "corporate name", the "name of a place", and a "figure" attributes are. That is, in telephone number register mode, a display as shown in drawing 42 is performed to a display 102, and since the items to input are an "identifier", "affiliation", the "address", and the "telephone number", the attribute "a name of a person" corresponding to these items, a "corporate name", the "name of a place", and a "figure" are memorized.

[0085] Since a display which inputs doing the action of a request in a desired location at the time of a request (at the time) into a display 102 in the input mode of the fixed form sentence 1 as shown in drawing 47 accomplishes to the above, with coordinates x13-x14, it is an attribute at "the time (at the time)", an attribute is the "name of a place" with coordinates x15-x16, and an attribute serves as an "action" with coordinates x21-x22. Input mode of this fixed form sentence 1. "He is "Patent Office (location) to" on tomorrow daytime (at the time)." "shall let's meet? (Action) It is possible to input " etc. Furthermore, the mode of retrieval 1 can be used so that the display which is for searching the data

of the man of living in a specific location, and asks a display 102 for the input of the name of a place as shown in drawing 48 may be made, for example, "Tokyo" may be inputted from the contents registered for example, in the above-mentioned telephone number register mode and the man of living in Tokyo may be searched. For this reason, in the mode of retrieval 1, an attribute is the "name of a place", and this attribute "the name of a place" is directly matched with the contents memory 77 of directions by retrieval 1, and it is memorized. Furthermore, the mode of retrieval 2 is for searching the data of those who belong to a specific organization from the contents registered for example, in the above-mentioned telephone number register mode, and it can be used so that those who the display which asks a display 102 for the input of a corporate name as shown in drawing 49 is made, for example, input a "marketing department" etc., and belong to a marketing department may be searched. For this reason, in the mode of retrieval 2, an attribute is a "corporate name", and this attribute "a corporate name" is directly matched with the contents memory 77 of directions by retrieval 2, and it is memorized.

[0086] By the program of the flow chart shown in drawing 50, since CC section 13A operates as an attribute information specification means 350, it explains this. It is started by starting of this equipment, and mode detection is performed (S71). That is, it is made to move so that the mode in which the pointer P of drawing 45 corresponds according to actuation of the mode key 64 may be pointed out, and the mode which this pointer P points out is detected. Here, with reference to the mode "telephone number registration" concerned of the contents memory 77 of directions shown in drawing 45, it detects whether the contents of attribute directions are set (S72). While acquiring the coordinate of Cursor K from a display and control section 17 since the jump place address aaa to the coordinate location memory 78 is set up if it corresponds to "telephone number registration", the range of the cursor coordinate memorized to this coordinate value and the jump place address aaa to the coordinate location memory 78 is compared, and whether Cursor's K being in the range of which cursor coordinate and the attribute information which detects and corresponds are acquired (S73). For example, as shown in drawing 42, when Cursor K is in the field of an input item "affiliation", the coordinate of Cursor K is coordinate x3 -x4 of the cursor location memory 78. It is in the range and an attribute "a corporate name" can be acquired. In addition, when like [the mode of retrieval 1 etc.], attribute information can be directly acquired from the contents memory 77 of directions. Next, CC section 13A sets this attribute information to the input word attribute storage section 19, returns to step (S74) 71, and continues processing. In addition, in step S72, when it is detected that the contents of attribute directions are not set, it sets "he has no attribute" to the input word attribute storage section 19, it returns to step (S75) 71, and processing is continued (when it is detected that "0" is set). Thus, CC section 13A has always changed attribute information.

[0087] The detail of dictionary retrieval section 15A adopted in the gestalt of this operation is shown in drawing 51. This dictionary retrieval section 15A is a point equipped with the retrieval condition attaching part 45 for receiving and memorizing that CC section 13A reads and sends out the attribute information on the input word attribute storage section 19, and is different from the dictionary retrieval section 15 of drawing 9. Control-section 40A sets attribute information to the above-mentioned retrieval condition attaching part 45, and when attribute information is acquired from the word dictionary 14 with word data, it determines a candidate as compared with the attribute information on the retrieval condition attaching part 45.

[0088] Since the above-mentioned control-section 40A operates by the program of the flow chart shown in drawing 52, this is explained. Control-section 40A clears the alphabetic character input buffer 41 (S21), and CC section 13A sets it to the retrieval condition attaching part 45 in response to the attribute information which reads from the input word attribute storage section 19, and is sent out (S62). Consequently, the attribute information on the input word attribute storage section 19 or "he has no attribute information" are set to the retrieval condition attaching part 45. The actuation as the case of the gestalt of the 1st operation with S26 [same] which compares with the code of the word dictionary 14 the figure or digit string which starts an input from the following step S22 is continued. Here If the candidate alphabetic character corresponding to the inputted figure or digit string is not memorized in the word dictionary 14 If a NEXT signal is given to the code pointer 42, stepping of the value is carried out (S27), it detects whether there is no candidate whom the code pointer 42 points out in step S28, and the entry of the last was completed and there is another entry, it will return to step S26 and processing will be continued. And if it is detected at step S28 that it is the last, the contents of the retrieval condition attaching part 45 will be investigated, and it will detect whether attribute information is set (S63). Here, if attribute information is set, it will reset, will change into "he has no attribute information" (S64), it will return to step S25 further, and actuation will be continued.

[0089] On the other hand, if a candidate is detected in step S26, the contents of the retrieval condition attaching part 45 will be investigated, and it will detect whether attribute information is set (S65). Here, if attribute information is set, it detects whether this attribute information and a candidate's acquired attribute information are in agreement (S66), and if not in agreement, it will progress to step S27 and other candidates will be searched. As stated above, by drawing 13, attribute information is added after each candidate (Str1-n), and is memorized. If attribute information is in agreement in step S66 while performing such processing, this candidate's code will be outputted to the retrieval result alphabetic character output buffer 43 (S30), and the same processing as the gestalt of the 1st operation will be performed henceforth. Moreover, the same processing as the gestalt of the 1st operation is continued, without detecting the coincidence inequality of attribute information as attribute information is reset, i.e., "with no attribute information", in step S65.

[0090] Since the candidate of the attribute concerned is extracted and outputted when it **, the attribute of the alphabetic character which starts an input according to the gestalt of this operation, or a character string is specified and a candidate alphabetic character or a candidate character string is searched from the word dictionary 14, a desired word etc. can be obtained quickly (kanji etc.). That is, since only the candidates (for example, "name of a place") of a desired attribute are chosen and outputted when there are two or more candidates corresponding to the inputted figure or digit string, out of the candidate scolded to some extent, an operator can get the alphabetic characters (kanji etc.) concerning a desired conversion result, and is efficient.

[0091] In addition, in the above-mentioned example of a configuration, the operating frequency information for every word can be given to the word dictionary 14, time amount until the candidate who uses it well is outputted more early and obtains a conversion result in the example of a configuration constituted so that it may output from a candidate with high operating frequency can be shortened more, and it is convenient.

[0092] Next, the alphabetic character input unit concerning the gestalt of operation of this invention for the English areas is explained. The front view of the portable wireless telephone with which the alphabetic character input unit concerning the gestalt of this operation was applied to drawing 53 is shown. If a hand set 101 consists of a case of the shape of a little flat rectangular parallelepiped and it applies to the lower part from the center of a front face, ten key (dialing key) 103E which consists of a key of four-line three trains is prepared, and the display 102 for displaying information, such as an alphabetic character and a notation, is formed in the upper part. Moreover, receiver section 104A for hearing the voice sent is prepared above a display 102, and transmission section 105A for inputting voice is prepared in the lower part location of ten key 103E.

[0093] The internal configuration of the above-mentioned portable wireless telephone is equal to the thing of the gestalt of the 1st operation shown in drawing 2. The block diagram when the portable wireless telephone of drawing 53 becomes a mode of operation as an alphabetic character input unit is shown in drawing 54. This configuration is equivalent to the part which consists of the input section 2 and the character input/output section 7 in the internal configuration of the portable wireless telephone of drawing 2. The keyboard 11 for an alphabetic character input device to input an alphabetic character etc. and the input-control section 12 which incorporates the information on the key stroke in a keyboard 11, and is sent out to the CC section 13, Word dictionary 14E which is dictionary means 310E the CC section 13 which carries out generalization control of each part of an alphabetic character input unit, and an input-statement character, the candidate alphabetic character of an input string and a conversion result or a candidate character string was matched and remembered to be, The dictionary retrieval section 15 which obtains the candidate alphabetic character or candidate character string which corresponds with reference to word dictionary 14E about the input-statement character or input string given from the CC section 13, The display 16 which consists of LCD as which information, such as an alphabetic character, is displayed, and the display and control section 17 which performs control for making a display 16 display a candidate alphabetic character or a candidate character string on the bottom of control of the CC section 13 are provided. Two or more alphabet is assigned to several character each key of ten key 103E of a keyboard 11 every. That is, three characters, "A", "B", and "C", are assigned to the "2" keys of the numerical keypad of arrangement of the usual dialing key, three characters, "D", "E", and "F", are assigned to the "3" keys, the alphabet is assigned three characters at a time by the "9" keys like the following, and "Q" and "Z" are assigned to the "0" keys. Moreover, the "*" key is used as the conversion (conversion/next candidate) key, and let the "#" key be the decision (decision) key. Two or more keys to which, as for the keyboard 11, two or more alphabet was assigned in the above, It is the input means 300 for inputting an alphabetic character or a character

string including the conversion / next candidate key for directing a transliteration, and the definite key for making a conversion result decide. A display 16 It is the output means 330 for displaying the candidate alphabetic character or candidate character string of a conversion result at least, and outputting it. The CC section 13 and the dictionary retrieval section 15 About the alphabetic character corresponding to the key inputted from the input means 300, or the inputted character string of two or more key correspondences The above-mentioned dictionary means 310E is searched, it asks for a candidate alphabetic character or a candidate character string, and a transliteration means 320 to send out this candidate alphabetic character or a candidate character string to the above-mentioned output means 330 is constituted.

[0094] The configuration of the above-mentioned keyboard 11 is equal to the configuration of the gestalt of the 1st operation shown in drawing 4 . The configuration of the input-control section 12 is equal to the configuration of the gestalt of the 1st operation shown in drawing 5 . It is equal to the 1st configuration of the gestalt of operation, and the key reading actuation which the control section 20 for which the contents of the memory table 22 contained in the above-mentioned input-control section 12 are shown in drawing 6 , and which is contained in the above-mentioned input-control section 12 performs further is equal to actuation of the gestalt of the 1st operation shown in drawing 7 . Moreover, it is equal to the 1st configuration of the gestalt of operation, and the detail configuration of the dictionary retrieval section 15 of the alphabetic character input unit in the gestalt of this operation with which the detail configuration of the display and control section 17 of the alphabetic character input unit in the gestalt of this operation is shown in drawing 8 is still more nearly equal to the configuration of the gestalt of the 1st operation shown in drawing 9 .

[0095] The contents memorized by word dictionary 14E are shown in drawing 55 . That is, the alphabetic character or character string (word) of the figure by actuation of ten key 103E according to the alphabet corresponding to a code And the dictionary information which consists of attribute information, such as a part of speech, a location, and time amount, and dictionary information on other is matched and memorized. For example, by ten key 103E, if "86596" is inputted, it has dictionary composition from which "Tokyo", its attribute information, etc. are acquired. More specifically, the configuration of word dictionary 14E is constituted as shown in drawing 58 R> 8 from drawing 56 . First, word dictionary 14E consists of blocks classified in the number of alphabetic characters as it is shown in drawing 56 . Each block corresponding to the number of alphabetic characters consists of two or more branches corresponding to the digit string of the number of alphabetic characters concerned as it is shown in drawing 57 . Here, two or more branches corresponding to the digit string of five characters exist in the block whose number of alphabetic characters is five characters, the branch corresponding to the digit string in it "25625" is specified, and the figure is displayed by "*" at the branch corresponding to other digit strings. Furthermore, the internal detail of the branch corresponding to a digit string "25625" is shown in drawing 58 . in the branch, the table corresponding to SOS (00) which shows the head of the candidate corresponding to the table (therefore -- the case where a consecutiveness figure is with (1) and (8) -- two tables) corresponding to (9), and a digit string in case there is no consecutiveness figure is contained from the consecutiveness figure in the case of existing (0). The consecutiveness figure of correspondence, the pointer NTP of degree table, and the pointer NBP of degree branch are set to the table corresponding to (9) from the consecutiveness figure (0). On the other hand on the table (SOS (00) was set to the head) corresponding to a digit string in case there is no consecutiveness figure The code SOS which shows the head of a candidate (that is, it corresponds to a digit string "25625") in case there is no consecutiveness figure (00) The code EOB (FF) which shows termination of the code EOS (FF) which shows termination of an alphabetic character or candidate code [of a character string] Str1 - Strn (being constituted by n characters is shown), and candidate alphabetic character or a candidate character string code, and a branch is set. Attribute information is added and memorized with the sign of a candidate code (Str1 - Strn constitute) which shows identification information later, respectively.

[0096] As mentioned above, two or more candidate alphabetic characters or candidate character strings exist in 1 branch, because two or more alpha characters were assigned to one key. For example, when the "2" keys and the "3" keys are operated continuously, "be" etc. which is meaningful as a word among nine kinds of candidate character strings by the combination of either ["D", "E", and "F"] "A", "B" or and "C" exists as a candidate character string. In the case of the digit string "25625" of the instantiation to drawing 57 , the word "clock" which is meaningful corresponding to this digit string, "block", etc. exist.

[0097] Since the control section 40 of the dictionary retrieval section 15 performs retrieval processing of word dictionary 14E like the gestalt of the 1st operation by the program of the flow chart shown in

drawing 14 , it explains actuation of a control section 40 according to this flow chart. A control section 40 clears the alphabetic character input buffer 41 (S21), and it waits for the code (code of a numerical keypad) of an input-statement character or an input string to come (S22). In this example, an operator makes "clock" an input-statement character, as shown in ST1 of drawing 59 . Then, an operator will operate the correspondence key of ten key 103E of a portable wireless telephone. Unlike ten key 103E of drawing 1 , the alpha character is written in ten key 103E of this drawing 59 by the keytop itself which has round four corners. Even if this character input unit is the ten key 103 of the gestalt of operation of drawing 1 , and it is ten key 103E of this drawing 59 , it shows that a suitable input is possible. The numerical keypad of ten key 103E is operated with "25625", as shown in ST2 of drawing 59 . An operator shows that it inputted by asking for the alpha character enclosed with the frame among the alpha characters corresponding to "25625" of ST2.

[0098] Then, the code corresponding to the numerical keypad concerning actuation is obtained by actuation of the input-control section 12 explained in drawing 7 , and the code train corresponding to the above "25625" is stored in the alphabetic character input buffer 41. Next, an operator operates the "*" key which are conversion / next candidate key in quest of conversion, as shown in ST3 of drawing 59 . By actuation of the input-control section 12 explained in drawing 7 also about the this "*" key, it is changed into a code and sent out to the CC section 13. The CC section 13 which received this sends out a retrieval start signal to the control section 40 of drawing 9 . Then, as shown in drawing 14 , the control section (S23) 40 which was supervising whether it was a retrieval start resets the code pointer 42 (S24), and makes a data selector signal a set condition (S25). Next, a control section 40 takes out the code stored in the alphabetic character input buffer 41 from a head, and begins retrieval from the block with one alphabetic character of word dictionary 14E. Since the technique of retrieval is the same also about the figure of what position, here explains from the retrieval in the block with three alphabetic characters.

[0099] The processing from the retrieval in the block with three alphabetic characters is shown in drawing 60 . when a digit string "25625" is inputted, a figure "2" to retrieval of the single figure should do -- retrieval should do about the digit string "25" to the double figures further -- according to a digit string "256", the table of the address "3F0F" of the block with three alphabetic characters is reached further. The consecutiveness figure of this table is "1", and since it differs from the 4th figure "2" of the digit string "25625" stored in the alphabetic character input buffer 41, the following table is searched based on NTP. Here, since only the candidate whose figure following a digit string "256" is "1", and the candidate who is "2" exist, the consecutiveness figure can be searching the table of "2" instantly. usually, a consecutiveness figure -- the table of "1", for the table of "2", and its degree, a consecutiveness figure is [the degree of the table of "1" / a consecutiveness figure] "3" ... as -- it carries out and the table of a desired consecutiveness figure is reached.

[0100] If a consecutiveness figure is in agreement, based on NBP of this table, the 1st table of a branch with four alphabetic characters "2562" will be reached. On the table here, a consecutiveness figure is "5" and it is in agreement with the 5th figure "5" of the digit string "25625" stored in the alphabetic character input buffer 41. If a consecutiveness figure is in agreement, the table of the following branch "25625" will be reached based on NBP of this table. Here, since there is originally no consecutiveness figure stored in the alphabetic character input buffer 41, the table on which "00" is set to the area of a consecutiveness figure is searched. In the example of this drawing 60 , it is premised on that there is no candidate with the figure which follows a digit string "25625" also in word dictionary 14E, i.e., there is no table, and the table of the address "98AC" with which "00" is immediately set to the area of a consecutiveness figure is reached from the table of a branch "2562."

[0101] In the example of drawing 60 , "clock" (code; 63, 6c, ...) is set to the 1st candidate character string, and the code of "clock" is read corresponding to the output value "0" of the code pointer 42. The above processing is equivalent to processing of the loop formation of steps S26, S27, and S28 from "retrieval" of step S25 in drawing 14 . Also when directing and reading each candidate alphabetic character, stepping of the code pointer 42 in step 27 corresponds in the target table, while corresponding, when retrieving the table in drawing 60 sequentially. Therefore, the retrieval of a candidate alphabetic character currently performed in drawing 60 in practice is equivalent to the case where word dictionary 14E shown in drawing 55 is being searched. In addition, although "clock" was obtained in this example If the candidate alphabetic character corresponding to the inputted digit string is not memorized in word dictionary 14E When a NEXT signal is given to the code pointer 42, stepping of the value is carried out (S27), the loop formation from step S28 to step S26 is repeated and a candidate alphabetic character or a candidate character string finally cannot be detected, in step S28, it branches

to YES. That is, an END signal is returned from the code pointer 42. Then, a control section 40 sends out "he has no relevance" to the CC section 13 using retrieval result information. The CC section 13 which received "he has no relevance" displays the purport which sends out the character font of "having no relevance" to a display and control section 15, and does not have the corresponding candidate on the LCD display 16 (S29).

[0102] The code of "clock" obtained as mentioned above is outputted to the retrieval result alphabetic character output buffer 43 (S30). The notice of a result output is given to the CC section 13 using retrieval result information, and the code of "clock" is incorporated by the CC section 13 from the retrieval result alphabetic character output buffer 43, is further sent to a display and control section 17, it is carried out as drawing 8 explained it, and the display in a display (LCD) 16 is presented with it. That is, "clock" is displayed on a display (LCD) 16. The control section 40 of the dictionary retrieval section 15 is supervising actuation of a definite key, or actuation of a next candidate key (S31, S32). Actuation of a definite key or actuation of a next candidate key is sent out from the input-control section 12 like the case of actuation of the above-mentioned conversion key to the CC section 13.

[0103] In the example of drawing 59, since "clock" is a desired alphabetic character, as shown in ST4, the definite key is operated. The CC section 13 obtains the code of a definite key, and makes a retrieval start signal change inactively. In response, the control section 40 of the dictionary retrieval section 15 branches from step 31 to YES, and makes the above-mentioned candidate alphabetic character decide. In addition, when "block" and "clock" are stored in word dictionary 14E in order corresponding to "25625" As shown to ST5 of drawing 59 by the parenthesis, a next candidate key is first operated to the display of "block." This gives a NEXT signal to the code pointer 42, stepping of the value is carried out (S27), the code of "clock" of the next candidate is obtained, and it progresses to S30 from step S26. Also in this case, since "clock" is a desired alphabetic character, as shown in ST4, a definite key is operated. Processing will be performed by subsequent processings like the above-mentioned.

[0104] Since two or more alpha character keys are assigned to each key and the alphabetic character input device applied to the gestalt of this operation as above is equipped with conversion / next candidate key, and a definite key, it can input appropriately the candidate character string which consists of combination of the alpha character train assigned to the candidate alphabetic character corresponding to the alpha character assigned to the operated key, or two or more keys which were operated, and can choose it. That is, it is suitable for an information terminal with few keys.

[0105] If the "*" key which are conversion / character candidate key is not operated with the gestalt of the above-mentioned operation, since any display is not made by the display 102, it does not know whether to be that the right key stroke is made, and operability is not necessarily good. Then, the program corresponding to the flow chart of drawing 14 with which the control section 40 of the dictionary retrieval section 15 is equipped is replaced with the program corresponding to the flow chart of drawing 17. By this, when it keys with "25625" corresponding to "clock" The actuation is [that "2", "25", ..., "25625" and the figure corresponding to the operated key increase, and is displayed as shown in drawing 61 for every actuation of each key and the key input is received, and] infallible. That is, it can check that the numerical keypad to which each alpha character of "clock" is assigned is operated. When the "*" key which are conversion / next candidate key is operated, the transliteration using word dictionary 14E is performed, the code of the candidate alphabetic character which corresponds from word dictionary 14E is read, and this is replaced with the display of the above-mentioned digit string "25625", and is displayed. In addition, the example of drawing 61 shows that the 1st candidate character string of the table corresponding to the digit string "25625" of word dictionary 14E was set to "clock."

[0106] As a table with which the control section 40 of the dictionary retrieval section 15 in the alphabetic character input device concerning the gestalt of the 3rd operation is equipped, furthermore, from "2" by "0" When the alphabetic character of the beginning of the alphabet assigned to the corresponding key is memorized as the 1st candidate, The code of "2" and the code of "a" that is, the code of "3" and the code of "d" When the code of "4" and the code of "g" have the table on which ..., the code of "0", and the code of "q" were matched for the code of "5", and the code of "j" When it keys with "25625" by performing processing of the flow chart corresponding to the program of drawing 19 corresponding to "clock" As shown in drawing 62, for every actuation of each key "a", "aj", ..., "ajmaj", The alphabetic character of the head corresponding to the operated key increases, and is displayed, and it can check that the key input is received and that the actuation is infallible, i.e., the key to which each alpha character of "clock" is assigned is operated. When the "*" key which are conversion / next candidate key is operated, the transliteration using word dictionary 14E is performed like the above, the code of the candidate alphabetic character which corresponds from word dictionary

14E is read, and this is replaced with the display of a top Noriyuki character string "ajmaj", and is displayed. In addition, the example of drawing 62 shows that the 1st candidate character string of the table corresponding to the digit string "25625" of word dictionary 14E was set to "clock."

[0107] Furthermore, for every actuation of each key, when it keys with "2337" corresponding to "beer" by performing processing of the flow chart corresponding to the program of drawing 22 with which the control section 40 of the dictionary retrieval section 15 in the alphabetic character input unit concerning the gestalt of the 4th operation is equipped, as shown in drawing 63, "a", "be", "add", ..., "beer" are displayed. That is, the 1st candidate of the table of the candidate alphabetic character corresponding to the figure "2" of word dictionary 14E is "a." The 1st candidate of the table of the candidate alphabetic character corresponding to the digit string "23" of word dictionary 14E is "be." When the 1st candidate of the table of the candidate alphabetic character corresponding to the digit string "233" of word dictionary 14E is "add" and the 1st candidate of the table of the candidate alphabetic character corresponding to the digit string "2337" of word dictionary 14E is "beer" The candidate alphabetic character or candidate character string changed in above order is displayed without operating conversion / next candidate key in any way.

[0108] Furthermore, by performing processing of the flow chart corresponding to the program of drawing 25 with which the control section 40 of the dictionary retrieval section 15 in the alphabetic character input unit concerning the gestalt of the 5th operation is equipped, when taking out a candidate from word dictionary 14E, the candidate to the existing predetermined individual is taken out, and it outputs to the retrieval result alphabetic character output buffer 43 with a selection figure. Thereby, according to the key stroke of "227", "bar", "cap", and "car" are displayed on the display screen of a display 102 with the selection figures 1-3 so that drawing 64 may show caudad. A control section 40 makes this candidate alphabetic character decide the input of a selection figure, when it is inputted, waiting and. Moreover, if there is no input of a selection figure, actuation of a next candidate key will be detected and a next candidate key will be operated, stepping of the code pointer 42 will be carried out [above-mentioned] several predetermined candidate minutes (the example of above-mentioned drawing 64 three pieces), and it will progress to retrieval of other candidates. Thus, since these are indicated by coincidence and selection is presented when two or more candidates exist, it is effective in the ability to decide a candidate alphabetic character quickly.

[0109] Furthermore, when the equipment for the above-mentioned English areas adopts the 6th configuration of the gestalt of operation, a display and control section 17 displays "bar", "cap", "car", and "the next candidate (English)" on the location of the transparent electrode 52 of the display screen of a display 102 so that drawing 65 may show caudad. When actuation of a next candidate key is detected, the pointer for a display is changed, stepping of the code pointer 42 is carried out [above-mentioned] several predetermined candidate minutes (the example of above-mentioned drawing 65 three pieces), and it progresses to retrieval of other candidates. That is, by advancing these by three pieces, when [both] the pointer for searching a candidate alphabetic character from the inside of the pointer for displaying a candidate about the candidate character string of the table on which word dictionary 14E corresponds, and the table of word dictionary 14E is common, when it exists, the following three candidates are taken out and displayed. Thus, when two or more candidates exist, since [with a touch panel 50] these are indicated by coincidence and it is selectable, it is effective in the ability to decide a candidate alphabetic character quickly certainly.

[0110] The keyboard 11 is equipped with cursor movement keys 61 and 62 and the elimination key 63 while displaying Cursor C, as the equipment for the above-mentioned English areas as well as the configuration of drawing 30 is shown in drawing 66 for correcting an input-statement character etc. And a display and control section 17 is controlled by the program which shows a cursor pointer to the flow chart of drawing 31 based on the input of an alphabetic character, and the actuation information on cursor movement keys 61 and 62. And in exception processing, an input figure or an input digit string is displayed, and correction is guaranteed here. That is, in exception processing, the digit string set to the alphabetic character input buffer 41 is sent out to a display and control section 17. If conversion / next candidate key is operated after correction, processing after step S23 of the flow chart of drawing 14 will be performed. Thereby, an incorrect input can be corrected appropriately.

[0111] Furthermore, when inputting the word which the attribute understands by making the word dictionary of an English-language edition equipped with the attribute information corresponding to the word dictionary 14 shown in drawing 44 provide, and making the same configurations of other as the mode of the 10th operation have also about the actuation explained in the mode of the 10th operation, a desired word etc. can be obtained quickly (alphabetic word etc.). That is, when there are two or more

candidates of the alphabetic word corresponding to the inputted figure or digit string, the candidate of a desired attribute is chosen and outputted, and out of the candidate scolded to some extent, an operator can get the words (alphabetic word etc.) concerning a desired conversion result, and is efficient.

[0112] Next, in the alphabetic character input unit for the above-mentioned English areas, the gestalt of the operation which makes the alphabetic character of the head of a sentence a capital letter is explained. As shown in drawing 67, the tooth-space (space) key 67 and the line feed (return) key 68 are formed under the ten key 103E, and keyboard 11A consists of portable wireless telephones to which this alphabetic character input unit was applied. Moreover, the period (".") is matched with the "1" key of ten key 103E. The input code from keyboard 11A is key correspondence, and each character code of the candidate alphabetic character of word dictionary 13E or a candidate character string is constituted by the small letter code.

[0113] The configuration of the above-mentioned alphabetic character input unit is shown in drawing 68. In the gestalt of this operation, the configurations of CC section 13A differ to the configuration of drawing 54. or [that is, / outputting the character code which outputs to CC section 13A according to the distinction result by beginning-of-a-sentence distinction means 132 distinguish the alphabetic character of a beginning of a sentence based on the list of the code corresponding to the key inputted, capital letter conversion means 133 change and output the character code given to the character code of a capital letter, and the above-mentioned beginning-of-a-sentence distinction means 132 through said capital letter conversion means 133] -- or it has whether it outputs as it is and the means for switching 134 switch. moreover, CC section 13A is equipped with the management tool 131, and when it is reception and a predetermined code, a management tool 131 the code corresponding to the key inputted The code of remaining as it is, the candidate alphabetic character which sends this out to the dictionary retrieval section 15, is made to search the candidate by the consultation of a dictionary using word dictionary 14E by changed and accumulating at the times other than a predetermined code, and starts a retrieval result, or a candidate character string is obtained for this. Next, the code which has carried out [above-mentioned] are recording, and the code of the retrieval result by the dictionary retrieval section 15 are arranged in order, and it sends out to a means for switching 134 and the beginning-of-a-sentence distinction means 132. In here, the above-mentioned predetermined code is a code by actuation of the "1" key in which the space key 67, the line feed key 68, and the period were assigned.

[0114] The beginning-of-a-sentence distinction means 132 detects whether out of the list of the code given from a management tool 131, if the space code of the above-mentioned predetermined codes and a line feed code are detected, the first code (except for a predetermined code) which is ahead [the] is the code of a period. And directions are given to a means for switching 134, the code for one character is sent out to the capital letter conversion means 133, and if it is codes other than a period, the code will be made to output as it is, when the first code (except for a predetermined code) ahead of a space code and a line feed code is the code of a period. In addition, a means for switching 134 sends out the first code of one character to the capital letter conversion means 133, is making the subsequent code output as it is, and according to directions of the beginning-of-a-sentence distinction means 132, it sends out the code concerned of one character to the capital letter conversion means 133, and it is committed at the beginning so that a code may be made to output as it is after that. Moreover, a top character code shall be outputted from a management tool 131 at the time of the change-over directions by the beginning-of-a-sentence distinction means 132.

[0115] Since it is constituted by the computer, and CPU controls turning on and off of the capital letter flag of main memory and is changing the code based on this based on the program of the flow chart of drawing 69, specifically, CC section 13A explains this. If the power source of equipment is switched on, it will be started, the value n of the character-position register of main memory will be set to 1 (s201), and a capital letter flag will be set to ON (s202). Next, detection of waiting (s203) and a key input is performed for a key input result being sent from the input-control means 12 (s204), migration of Cursor K (drawing 42 etc.) is directed to a display and control section 17 according to a key input (s205), and a capital letter flag is made off (s206). The code of the alphabetic character which starts the conversion result of the alphabetic character concerned since the capital letter flag is set the above result when it keys first is used as the code of a capital letter, and about the alphabetic character inputted into a degree, since the capital letter flag is then cleared, the character code concerning the conversion result is outputted as it is.

[0116] Therefore, when it inputs so that "This is a pen.That is a book." and a result may be obtained as shown in drawing 73, top "T" is made into a capital letter, and "h" following this becomes a small letter.

Furthermore, CC section 13A performs detection of waiting (s207) and a key input for a key input result being sent from the input-control means 12 (s208), and directs migration of Cursor K (drawing 42 etc.) to a display and control section 17 according to a key input (s209), and it detects whether the character code in front of n (= 1) character is a space code or a line feed code from this cursor K (s210). Here, since "his" is inputted following "T", one-character before of Cursor K does not serve as a space code or a line feed code, it branches to no at step s210, OFF of a capital letter flag is continued (s217), and the actuation from step s207 is continued. It is "s" of "This", next while the above-mentioned processing is continued, since a tooth space is inputted, it branches to yes at step s210, and one increment of values n of a character-position register is carried out, and they are set to "2" (s211). And it is detected whether the character code 2 characters before Cursor K is a code of a period (s212). In the above-mentioned example, it is the code of "s", and since it is not a period, it progresses to step s213 and it is detected whether the character code 2 characters before Cursor K is a code of a tooth space (s213). In the above-mentioned example, the value n of a character-position register is returned to 1 by that which is not a space code, either (it is the code of "s".) (s216), and actuation from step s217 is performed. And when processing progresses like the following and the tooth space in front of "That" is detected, it progresses with steps S210, S211, and S212, and branches to yes here, the value n of a character-position register is returned to 1 (s214), a capital letter flag is set to ON (s215), and the processing after step s207 is continued. Consequently, "T" of "That" becomes a capital letter. In addition, the path which branches to yes at step s213, and returns to step s211 is processing when two or more tooth spaces are inputted after a period.

[0117] As mentioned above, since turning on and off of a capital letter flag is controlled, based on turning on and off of this capital letter flag, conversion of the output code to a display and control section 17 is performed, and the initial character of a sentence is changed and outputted to a capital letter. In conversion of the above-mentioned character code, since only 20 H (H is a hexa display) differ as the code of the capital letter of the alphabet and the code of a small letter are shown in drawing 70 , if 20H are subtracted from a small letter code, the code of a capital letter can be obtained.

[0118] Although the above-mentioned explanation explained the alphabetic character input unit equipped with two or more keys to which two or more alphabet of **** was assigned although shown in drawing 67 , the function which carries out automatic conversion of the small letter code at a capital letter code is applicable to alphabetic character input units, such as a typewriter which has a full keyboard. That is, in the alphabetic character input unit which has adopted full keyboard 11B by which all the one-character alphabet of one character as shown in drawing 71 is assigned to one key, the input of a small letter is made in the state of the usual shift, and if a desired letter key is operated, operating a Shift-key, this capital letter corresponding to a letter key can be inputted. That is, as shown in drawing 74 , it is necessary to operate the letter key of "T" at the time of the input of "T" of "That", operating a Shift-key, respectively, and actuation is troublesome at the time of the input of "T" of "This" to obtain an output with "This is a pen.That is a book.", as shown in drawing 73 R> 3. In addition, " " of drawing 73 - drawing 76 shows the input of a space key.

[0119] Moreover, the "caps" key is prepared, and it consists of other full keyboards so that the change of a capital letter and a small letter may be performed. When this kind of full keyboard is used, as shown in drawing 75 , it is necessary to input before and after the input of "T" of "This" by operating the "caps" key before and after the input of "T" of "That", and actuation is troublesome too to obtain an output with "This is a pen.That is a book."

[0120] Then, it constitutes as an alphabetic character input unit is shown in drawing 72 . That is, full keyboard 11B shown in drawing 71 is adopted, and the code of a small letter is changed into a capital letter by CC section 13B. The input-control section 12 generates a character code (character code of a capital letter when [Therefore] it inputs with the character code of a small letter, and actuation of a Shift-key in the state of the shift which is usual) corresponding to a letter key, and sends it out to management tool 131B. Management tool 131B is accumulated without sending a code to the dictionary retrieval section 15, and is outputted synchronizing with distinction by the beginning-of-a-sentence distinction means 132. It operates by the program of the already shown flow chart of drawing 69 in fact, turning on and off of a capital letter flag is controlled, and a character code is changed based on this. Without completely operating a Shift-key, as it faces operating full keyboard 11B shown in drawing 71 and is shown to drawing 76 R> 6 by this, if it is in the usual shift condition and "THIS_IS_A_PEN_THAT_IS_A_BOOK." is inputted, the initial character of a text will be automatically changed and outputted to a capital letter, and there is an advantage released from a complicated key stroke like before.

[Translation done.]

*** NOTICES ***

JPO and NCIP are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

EFFECT OF THE INVENTION

[Effect of the Invention] As explained above, according to invention of this invention according to claim 1, the key to which two or more alphabetic characters were assigned is operated, an alphabetic character or a character string can be inputted, and a required alphabetic character input is possible irrespective of the small number of keys. And since the method which obtains a candidate by dictionary retrieval is adopted, it is possible to obtain easily also about the candidate containing the contracted sound which can choose meaningful alphabetic character or character string from the mere arrays of the assigned alphabetic character, and cannot key from the key of Kiyone in the case of Japanese, dulness, and a p-sound.

[0122] As explained above, according to invention of this invention according to claim 2, the ten key with which two or more alphabetic characters were assigned is operated, an alphabetic character or a character string can be inputted, and a required alphabetic character input is possible irrespective of the small number of keys. That is, if it is equipment equipped with the ten key, it is possible to obtain easily also about the candidate containing the contracted sound which can choose meaningful alphabetic character or character string from the mere arrays of the assigned alphabetic character, and cannot key from the key of Kiyone in the case of Japanese, dulness, and a p-sound.

[0123] As explained above, the figure and the alphabet corresponding to a key which were operated in the middle of the key stroke according to invention of this invention according to claim 3 are displayed, and it can check whether the key stroke is performed correctly.

[0124] As explained above, the display of the candidate alphabetic character of a result or candidate character string which searched the dictionary means in the middle of the key stroke according to invention of this invention according to claim 4 is made, and it can check whether the key stroke is performed correctly.

[0125] Since the display of the candidate alphabetic character of the 1st place of a result or candidate character string which searched the dictionary means in the middle of the key stroke is made according to invention of this invention according to claim 5 as explained above, the 1st candidate into whom it was changed whether the key stroke is correctly carried out to the unit in the word etc. can be seen and checked.

[0126] Since these candidate alphabetic characters or a candidate character string is displayed a predetermined individual every according to invention of this invention according to claim 6 when there are two or more candidate alphabetic characters or candidate character strings as explained above, there is effectiveness which can choose a suitable candidate exactly quickly.

[0127] There is effectiveness which can choose the candidate who was displayed according to invention of this invention according to claim 7 with a touch panel as explained above, and can choose a suitable candidate exactly quickly.

[0128] It has possibility that the candidate who was not able to search since it changed about the input-statement character or the input string and changed again when a candidate alphabetic character or a candidate character string was not obtained according to invention of this invention according to claim 8 can be searched as explained above.

[0129] Since the tail alphabetic character of an input string is deleted when a candidate alphabetic character or a candidate character string is not obtained according to invention of this invention according to claim 9, and it changes about an input-statement character or an input string, as explained above, and it changes again, the candidate who was not able to search when the alphabetic character of a tail stuck can be searched, and a candidate alphabetic character or a candidate character string can be obtained.

[0130] According to invention of this invention according to claim 10, as explained above, it changes about the input-statement character or input string which became an operation mistake on the occasion of actuation of a key, and the candidate who was not able to search can be searched and a candidate alphabetic character or a candidate character string can be obtained.

[0131] As explained above, when conversion is made and it transmits in the range of the character code which can process a transmitting partner terminal, according to invention of this invention according to claim 11, in a partner terminal, processing becomes possible.

[0132] As explained above, since the range of the character code which can be processed is obtained from a range information table in a transmitting partner terminal and it changes in the range of the character code which can process a transmitting partner terminal, when it transmits according to invention of this invention according to claim 12, in a partner terminal, processing becomes possible.

[0133] According to invention of this invention according to claim 13, as explained above, face in quest of a candidate alphabetic character or a candidate character string, and since it asks for the candidate alphabetic character or candidate character string applicable to the specified attribute information Only a candidate alphabetic character with the specified attribute and an attribute in agreement or a candidate character string will be displayed with an output means, an unrelated candidate alphabetic character or a candidate character string is removed, and a candidate can be obtained efficiently.

[0134] Since only the candidate alphabetic character in which the attribute of the alphabetic character which starts an input with the mode under processing, or a character string is specified, and has the specified attribute and an attribute in agreement, or a candidate character string will be displayed with an output means according to invention of this invention according to claim 14 as explained above, a candidate alphabetic character with the attribute according to a processing mode or a candidate character string can be obtained efficiently.

[0135] Since only the candidate alphabetic character in which the attribute of the alphabetic character which starts an input from the display position of cursor, or a character string is specified, and has the specified attribute and an attribute in agreement, or a candidate character string will be displayed with an output means according to invention of this invention according to claim 15 as explained above, a candidate alphabetic character with the attribute according to the location concerning an input or a candidate character string can be obtained efficiently.

[0136] Since only the candidate alphabetic character in which the attribute of the alphabetic character concerning a subsequent input or a character string is specified by attribute directions of an operator, and has the specified attribute and an attribute in agreement with them, or a candidate character string will be displayed with an output means according to invention of this invention according to claim 16 as explained above, a candidate alphabetic character with the attribute for which an operator asks, or a candidate character string can be obtained efficiently.

[0137] According to invention of this invention according to claim 17, as explained above, the beginning of a sentence of the inputted sentence is detected automatically, and the alphabetic character of this beginning of a sentence is automatically made into a capital letter, and since it will be outputted, it is suitable for text inputs, such as English.

[0138] If the key to which two or more alphabetic characters were assigned according to invention of this invention according to claim 18 is operated as explained above, and conversion / next candidate key is operated When a dictionary means is searched and it can ask for a candidate alphabetic character or a candidate character string about the alphabetic character corresponding to the inputted key, or the inputted character string of two or more key correspondences The beginning of a sentence of the sentence by this candidate alphabetic character or the candidate character string is detected automatically, and the alphabetic character of this beginning of a sentence is automatically made into a capital letter, and since it will be outputted, it serves as [the head of a sentence] a capital letter and is convenient when obtaining an English text by dictionary retrieval.

[0139] In language, such as English which inputs line feed or a tooth space after a period according to invention of this invention according to claim 19 as explained above, and starts a sentence, the head of a sentence becomes a capital letter and is convenient.

[0140] Since the kana alphabetic character is assigned to two or more keys of an input means according to invention of this invention according to claim 20 as explained above, the alphabetic character input concerning a Japanese input is enabled.

[0141] Since the alpha character is assigned to two or more keys of an input means according to invention of this invention according to claim 21 as explained above, the alphabetic character input concerning an alphabet input is enabled.

[0142] As explained above, according to invention of this invention according to claim 22, an alphabetic character input is attained in a portable wireless telephone, and there is effectiveness which can perform are recording of a text and messaging with a partner using a pocket mold radiotelephone.

[Translation done.]

* NOTICES *

JPO and NCIP are not responsible for any damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.

2.**** shows the word which can not be translated.

3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The front view of the portable wireless telephone with which the alphabetic character input unit concerning the gestalt of operation of this invention was applied.

[Drawing 2] The block diagram of the portable wireless telephone with which the alphabetic character input unit concerning the gestalt of operation of this invention was applied.

[Drawing 3] The block diagram of the alphabetic character input unit concerning the gestalt of operation of the 1st of this invention.

[Drawing 4] The block diagram of the key matrix part which is the important section of the alphabetic character input unit shown in drawing 3.

[Drawing 5] The block diagram of the input-control section which is an important section of the alphabetic character input unit shown in drawing 3.

[Drawing 6] The block diagram of the memory table with which the input-control section which is an important section of the alphabetic character input device shown in drawing 3 is equipped.

[Drawing 7] The flow chart for explaining actuation of the input-control section which is an important section of the alphabetic character input device shown in drawing 3.

[Drawing 8] The block diagram of the display and control section which is an important section of the alphabetic character input unit shown in drawing 3.

[Drawing 9] The block diagram of the dictionary retrieval section which is an important section of the alphabetic character input unit shown in drawing 3.

[Drawing 10] The outline block diagram of the dictionary which is the important section of the alphabetic character input unit shown in drawing 3.

[Drawing 11] The concrete block diagram of the dictionary which is the important section of the alphabetic character input unit shown in drawing 3.

[Drawing 12] The concrete block diagram of the dictionary which is the important section of the alphabetic character input unit shown in drawing 3.

[Drawing 13] The concrete block diagram of the dictionary which is the important section of the alphabetic character input unit shown in drawing 3.

[Drawing 14] The flow chart for explaining actuation of the dictionary retrieval section which is an important section of the alphabetic character input device shown in drawing 3.

[Drawing 15] Drawing for explaining the input operation using the alphabetic character input unit concerning the gestalt of operation of the 1st of this invention.

[Drawing 16] Drawing for explaining the dictionary retrieval by the input operation using the alphabetic character input unit concerning the gestalt of operation of the 1st of this invention.

[Drawing 17] The flow chart for explaining actuation of the dictionary retrieval section which is an important section of the alphabetic character input device concerning the gestalt of operation of the 2nd of this invention.

[Drawing 18] Drawing explaining the display procedure by the alphabetic character input unit concerning the gestalt of operation of the 2nd of this invention.

[Drawing 19] The flow chart for explaining actuation of the dictionary retrieval section which is an important section of the alphabetic character input device concerning the gestalt of operation of the 3rd of this invention.

[Drawing 20] Drawing explaining the display procedure by the alphabetic character input unit concerning the gestalt of operation of the 3rd of this invention.

[Drawing 21] Drawing explaining the display procedure by the alphabetic character input unit concerning

the modification of the gestalt of operation of the 3rd of this invention.

[Drawing 22] The flow chart for explaining actuation of the dictionary retrieval section which is an important section of the alphabetic character input device concerning the gestalt of operation of the 4th of this invention.

[Drawing 23] Drawing for explaining the display procedure by the alphabetic character input unit concerning the gestalt of operation of the 4th of this invention.

[Drawing 24] Drawing explaining the display procedure by the alphabetic character input unit concerning the modification of the gestalt of operation of the 4th of this invention.

[Drawing 25] The flow chart for explaining actuation of the dictionary retrieval section which is an important section of the alphabetic character input device concerning the gestalt of operation of the 5th of this invention.

[Drawing 26] Drawing showing the example of a display of the candidate by the alphabetic character input unit concerning the gestalt of operation of the 5th of this invention.

[Drawing 27] The block diagram of the alphabetic character input unit concerning the gestalt of operation of the 6th of this invention.

[Drawing 28] The flow chart for explaining actuation of the dictionary retrieval section which is an important section of the alphabetic character input device concerning the gestalt of operation of the 6th of this invention.

[Drawing 29] Drawing showing the configuration of the touch panel which is the important section of the alphabetic character input device concerning the gestalt of operation of the 6th of this invention, and the example of a display in there.

[Drawing 30] Drawing showing the display which is an important section of the alphabetic character input device concerning the gestalt of operation of this invention, and the important section of a keyboard.

[Drawing 31] The flow chart which shows the cursor control actuation in the alphabetic character input device concerning the gestalt of operation of this invention.

[Drawing 32] The block diagram of the alphabetic character input unit concerning the gestalt of operation of the 7th of this invention.

[Drawing 33] The flow chart for explaining actuation of the dictionary retrieval section which is an important section of the alphabetic character input device concerning the gestalt of operation of the 7th of this invention.

[Drawing 34] The block diagram of the alphabetic character input unit concerning the gestalt of operation of the 8th of this invention.

[Drawing 35] Drawing showing the interior of the error amendment table which is the important section of the alphabetic character input device concerning the gestalt of operation of the 8th of this invention.

[Drawing 36] The flow chart for explaining actuation of the dictionary retrieval section which is an important section of the alphabetic character input device concerning the gestalt of operation of the 8th of this invention.

[Drawing 37] The flow chart for explaining actuation of the dictionary retrieval section which is an important section of the alphabetic character input device concerning the gestalt of operation of the 8th of this invention.

[Drawing 38] The block diagram of the alphabetic character input unit concerning the gestalt of operation of the 9th of this invention.

[Drawing 39] Drawing showing the interior of the character range information table which is the important section of the alphabetic character input device concerning the gestalt of operation of the 9th of this invention.

[Drawing 40] The flow chart for explaining character range information acquisition actuation of the alphabetic character input device concerning the gestalt of operation of the 9th of this invention.

[Drawing 41] The flow chart for explaining actuation of the dictionary retrieval section which is an important section of the alphabetic character input device concerning the gestalt of operation of the 9th of this invention.

[Drawing 42] The front view of the portable wireless telephone with which the alphabetic character input unit concerning the gestalt of operation of the 10th of this invention was applied.

[Drawing 43] The block diagram of the alphabetic character input unit concerning the gestalt of operation of the 10th of this invention.

[Drawing 44] The block diagram of the word dictionary of the alphabetic character input unit concerning the gestalt of operation of the 10th of this invention.

[Drawing 45] The block diagram of the contents memory of directions used in the alphabetic character input unit concerning the gestalt of operation of the 10th of this invention.

[Drawing 46] The block diagram of cursor location memory used in the alphabetic character input unit concerning the gestalt of operation of the 10th of this invention.

[Drawing 47] Drawing showing the example of a display at the time of the input mode of the fixed form sentence 1 in the alphabetic character input unit concerning the gestalt of operation of the 10th of this invention.

[Drawing 48] Drawing showing the example of a display at the time of the mode of the retrieval 1 in the alphabetic character input unit concerning the gestalt of operation of the 10th of this invention.

[Drawing 49] Drawing showing the example of a display at the time of the mode of the retrieval 2 in the alphabetic character input unit concerning the gestalt of operation of the 10th of this invention.

[Drawing 50] The flow chart for explaining the attribute specification actuation in the alphabetic character input device concerning the gestalt of operation of the 10th of this invention.

[Drawing 51] The block diagram of the dictionary retrieval section which is an important section of the alphabetic character input unit shown in drawing 43.

[Drawing 52] The flow chart for explaining the candidate retrieval actuation in the alphabetic character input device concerning the gestalt of operation of the 10th of this invention.

[Drawing 53] The front view of the portable wireless telephone with which the alphabetic character input unit concerning the gestalt of operation for the English areas of this invention was applied.

[Drawing 54] The block diagram of the alphabetic character input unit concerning the gestalt of operation for the English areas of this invention.

[Drawing 55] The block diagram of the word dictionary of the alphabetic character input unit concerning the gestalt of operation for the English areas of this invention.

[Drawing 56] The concrete block diagram of the word dictionary used for the alphabetic character input unit concerning the gestalt of operation for the English areas of this invention.

[Drawing 57] The concrete block diagram of the word dictionary used for the alphabetic character input unit concerning the gestalt of operation for the English areas of this invention.

[Drawing 58] The concrete block diagram of the word dictionary used for the alphabetic character input unit concerning the gestalt of operation for the English areas of this invention.

[Drawing 59] Drawing for explaining the input operation using the alphabetic character input unit concerning the gestalt of operation for the English areas of this invention.

[Drawing 60] Drawing for explaining the dictionary retrieval by the input operation using the alphabetic character input unit concerning the gestalt of operation for the English areas of this invention.

[Drawing 61] Drawing explaining the 1st display procedure by the alphabetic character input unit concerning the gestalt of operation for the English areas of this invention.

[Drawing 62] Drawing explaining the 2nd display procedure by the alphabetic character input unit concerning the gestalt of operation for the English areas of this invention.

[Drawing 63] Drawing explaining the 3rd display procedure by the alphabetic character input unit concerning the gestalt of operation for the English areas of this invention.

[Drawing 64] Drawing showing the example of a display of the candidate by the alphabetic character input unit concerning the gestalt of operation for the English areas of this invention.

[Drawing 65] Drawing showing the configuration of the touch panel which is the important section of the alphabetic character input device concerning the gestalt of operation for the English areas of this invention, and the example of a display in there.

[Drawing 66] Drawing showing the display which is an important section of the alphabetic character input device concerning the gestalt of operation for the English areas of this invention, and the important section of a keyboard.

[Drawing 67] The front view of the portable wireless telephone with which the alphabetic character input unit concerning the gestalt of the operation of the 2nd for the English areas of this invention was applied.

[Drawing 68] The block diagram of the alphabetic character input unit concerning the gestalt of the operation of the 2nd for the English areas of this invention.

[Drawing 69] The flow chart for explaining actuation of the alphabetic character input device concerning the gestalt of the operation of the 2nd for the English areas of this invention.

[Drawing 70] Drawing showing the code of an alphabet small letter and a capital letter.

[Drawing 71] Drawing showing key arrangement of a full keyboard.

[Drawing 72] The block diagram of the alphabetic character input unit concerning the gestalt of

operation for the English areas of this invention using a full keyboard.

[Drawing 73] Drawing showing the input result by drawing 68 and the alphabetic character input unit of drawing 72 .

[Drawing 74] Drawing showing the alphabetic character input operating procedure by the conventional method.

[Drawing 75] Drawing showing the alphabetic character input operating procedure by other conventional methods.

[Drawing 76] Drawing showing the alphabetic character input operating procedure by drawing 68 and the alphabetic character input unit of drawing 72 .

[Drawing 77] The front view of the portable wireless telephone with which the alphabetic character input unit concerning the conventional example was applied.

[Drawing 78] Drawing showing the conversion table used in the conventional alphabetic character input.

[Drawing 79] Drawing for explaining the alphabetic character input operation by the conversion table of drawing 78 .

[Drawing 80] Drawing showing the conversion table used in the conventional fixed form sentence input.

[Drawing 81] Drawing showing the ten key part of the alphabetic character input unit concerning the conventional example.

[Drawing 82] Drawing for explaining the alphabetic character input operation by the ten key of drawing 81 .

[Description of Notations]

1 Controller 2 Input Section

3 Transceiver Section 4 Speaking Circuit

5 Antenna 6 Message Control Section

7 Character Input/output Section 10 Key Matrix

11 11A Keyboard 12 and 12-A Input-control section

13, 13A, 13B CC section 14 14E Word dictionary

15 15A Dictionary retrieval section 16 (LCD) Display

17 Display and Control Section 20 Control Section

21 Timer 22 Memory Table

23 24 (MEM2, MEM1) Memory 25 26 Latch

31 Alphabetic Character Font Memory 32 Character-Font Expansion Section

33 Image Memory 34 Character Location Memory

40 40A Control section 41 Alphabetic character input buffer

42 Code Pointer 43 Retrieval Result Alphabetic Character Output Buffer

50 Touch Panel 51 Transparence Sheet

52 Transparent Electrode 53 Transparence Counterelectrode

55 Location Detection Means 60 and 60-A Modification Means

61 62 Cursor movement key 63 Elimination key

70 Error Amendment Table 71 72 (PMEM, KMEM) Memory

75 Character Range Information Table 76 Range Information Acquisition Means

77 Contents Memory of Directions 78 Cursor Location Memory

101 Hand Set 102,102A Display

103,103E Ten key 104 Earphone

104A Receiver section 105 Telephone transmitter

131,131B Management tool 132 Beginning-of-a-sentence distinction means

133 Capital Letter Conversion Means 134 Means for Switching

105A, 105B Transmission section 300 Input means

310,310E Dictionary means 320,320A Transliteration means

330 Output Means 350 Attribute Specification Means

[Translation done.]

* NOTICES *

JPO and NCIP are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

CORRECTION OR AMENDMENT

[Kind of official gazette] Printing of amendment by the convention of 2 of Article 17 of Patent Law
 [Section partition] The 3rd partition of the 6th section
 [Publication date] February 16, Heisei 13 (2001. 2.16)

[Publication No.] JP,8-314920,A
 [Date of Publication] November 29, Heisei 8 (1996. 11.29)
 [Annual volume number] Open patent official report 8-3150
 [Application number] Japanese Patent Application No. 8-12494
 [The 7th edition of International Patent Classification]

G06F 17/22
 H04B 1/38
 H04Q 7/32

[FI]

G06F 15/20 502 J
 H04B 1/38
 G06F 15/20 504 Z
 509 Z
 510 C
 520 S
 H04B 7/26 V

[Procedure revision]
 [Filing Date] February 9, Heisei 12 (2000. 2.9)
 [Procedure amendment 1]
 [Document to be Amended] Specification
 [Item(s) to be Amended] The name of invention
 [Method of Amendment] Modification
 [Proposed Amendment]
 [Title of the Invention] Alphabetic character input terminal unit
 [Procedure amendment 2]
 [Document to be Amended] Specification
 [Item(s) to be Amended] Claim
 [Method of Amendment] Modification
 [Proposed Amendment]
 [Claim(s)]
 [Claim 1] A dictionary means by which the digit string and the candidate character string were memorized by corresponding while the figure and the candidate alphabetic character corresponded and were memorized,
 The input means for inputting an alphabetic character or a character string including the ten key with which two or more alphabetic characters were assigned, the conversion key for directing a transliteration, and the definite key for making a conversion result decide,
 The output means for displaying the candidate alphabetic character or candidate character string of a conversion result at least, and outputting it,

A transliteration means to search said dictionary means, to ask for a candidate alphabetic character or a candidate character string, and to send out this candidate alphabetic character or a candidate character string to said output means about the digit string corresponding to the figure corresponding to the ten key inputted from said input means, or two or more keys which were inputted,
The alphabetic character input terminal unit characterized by providing a definite means to decide one based on actuation of said definite key out of said called-for candidate alphabetic character or a candidate character string.

[Claim 2] It is the alphabetic character input terminal unit according to claim 1 which a digit string and a candidate character string correspond, are memorized, and is characterized by the number of letters of said digit string being more than number of letters of said candidate character string while a figure and a candidate alphabetic character correspond and a dictionary means is memorized.

[Claim 3] A transliteration means is an alphabetic character input terminal unit according to claim 1 characterized by searching a dictionary means, asking for a candidate alphabetic character or a candidate character string, sending out this candidate alphabetic character or a candidate character string to an output means, and presenting a display, when the ten key with which the alphabetic character of an input means was assigned is operated.

[Claim 4] A candidate alphabetic character or a candidate character string is memorized in predetermined order by the dictionary means. A transliteration means If the ten key with which the alphabetic character of an input means was assigned is operated, will search a dictionary means and it will ask for the candidate alphabetic character of the 1st place, or a candidate character string. Send out this candidate alphabetic character or a candidate character string to an output means, present a display, and it asks for the 2nd place of subsequent candidate alphabetic characters or candidate character strings based on actuation of said conversion key. The alphabetic character input terminal unit according to claim 1 characterized by sending out this called-for candidate alphabetic character or candidate character string to an output means, and presenting a display.

[Claim 5] A transliteration means is an alphabetic character input terminal unit according to claim 1 characterized by sending out these candidate alphabetic characters or a candidate character string to a predetermined individual [every] output means, and presenting a display when a dictionary means is searched, it asks for a candidate alphabetic character or a candidate character string and there are two or more candidate alphabetic characters or candidate character strings.

[Claim 6] A touch panel is prepared in the candidate alphabetic character of an output means, or the viewing area of a candidate character string,

A location detection means to detect the input actuated valve position in this touch panel,
The alphabetic character input terminal unit according to claim 5 characterized by having a definite means to make a conversion result decide, based on correspondence relation with the display position of the detection result of this location detection means, a candidate alphabetic character, or a candidate character string.

[Claim 7] A dictionary means by which a figure, the candidate alphabetic character of a digit string and a conversion result or a candidate character string, and its attribute information were matched and memorized,

The input means for inputting an alphabetic character or a character string, and required information including the ten key with which two or more alphabetic characters were assigned, the conversion key for directing a transliteration, and the definite key for making a conversion result decide,

The output means for displaying the candidate alphabetic character or candidate character string of a conversion result at least, and outputting it,

An attribute specification means to specify the attribute of a candidate alphabetic character or a candidate character string based on the information inputted from said input means,

A transliteration means searches said dictionary means, faces in quest of a candidate alphabetic character or a candidate character string, asks for the candidate alphabetic character or candidate character string applicable to the attribute information specified by said attribute specification means, and send out this candidate alphabetic character or a candidate character string to said output means about the digit string corresponding to the figure corresponding to the key inputted from said input means, or two or more keys which were inputted,

The alphabetic character input terminal unit characterized by providing a definite means to decide one based on actuation of said definite key out of said called-for candidate alphabetic character or a candidate character string.

[Claim 8] It has the contents memory of directions the contents of directions for acquiring two or more

modes and attributes concerning processing were matched and remembered to be,

An attribute specification means is an alphabetic character input terminal unit according to claim 7 characterized by detecting the mode under processing, acquiring the contents of directions corresponding to this mode from the above-mentioned contents memory of directions, and acquiring the attribute of the alphabetic character which starts an input based on these contents of directions, or a character string.

[Claim 9] A cursor display means to display the cursor which shows the alphabetic character under input, or the location of a character string on an output means on the occasion of the input of an alphabetic character or a character string,

It has the cursor location memory the alphabetic character which starts an input corresponding to the location of this cursor, or the attribute information on a character string was matched and remembered to be,

An attribute specification means is an alphabetic character input terminal unit according to claim 7 or 8 characterized by acquiring the attribute of the alphabetic character concerning an input, or a character string from the display position of the cursor by the above-mentioned cursor display means, and the contents of the above-mentioned cursor location memory.

[Claim 10] An attribute specification means is an alphabetic character input terminal unit given in claim 7 characterized by acquiring the attribute of the alphabetic character concerning an input, or a character string according to the alphabetic character concerning the subsequent input inputted from an input means, or the contents of directions of the attribute of a character string thru/or any 1 term of 9.

[Claim 11] It is the alphabetic character input terminal unit according to claim 1 characterized by having further a means to choose the alphabetic character or character string of which an operator is notified by said conversion key, and to notify it when there are two or more the candidate alphabetic characters or candidate character strings which are called for.

[Claim 12] The numerical keypad for two or more alphabetic characters being assigned to each key, and inputting a figure,

It is a dictionary means by which a digit string and a candidate character string correspond and are memorized while a figure and a candidate alphabetic character correspond and are memorized, and the number of letters of said digit string is more than number of letters of said candidate character string,

A generating means for it to be combined with said dictionary means and to generate the candidate alphabetic character or candidate character string corresponding to said inputted figure or inputted digit string,

A display means to display said generated candidate alphabetic character or candidate character string. The alphabetic character input terminal unit characterized by providing a decision means to choose one from said displayed candidate alphabetic character or a candidate character string.

[Procedure amendment 3]

[Document to be Amended] Specification

[Item(s) to be Amended] DETAILED DESCRIPTION

[Method of Amendment] Modification

[Proposed Amendment]

[Detailed Description of the Invention]

[0001]

[Field of the Invention] Especially this invention is used as the equipment which has a limit in the number of keys, for example, the suitable alphabetic character input terminal unit for a Personal Digital Assistant, about an alphabetic character input terminal unit.

[0002]

[Description of the Prior Art] Various alphabetic character input units are realized by Personal Digital Assistants, such as the former, for example, a portable wireless telephone etc. First, as shown in drawing 77, the thing using the ten key (dialing key) 203 which applies caudad from the surface center section of the hand set 201 of a portable wireless telephone, and is arranged at four-line three trains is known. The following two kinds are known as the input technique.

[0003] A matrix character-array table as shown in drawing 78 is used for the 1st technique. That is, the pair of a figure and one character (notation) are matched and memorized. And with reference to the above-mentioned table, one character (notation) can be inputted by inputting the pair of the figure corresponding to the matrix of a desired alphabetic character (notation). for example, -- " -- ** -- as shown in drawing 79, "4513228513" and a ten key are operated to obtain an input with method of float

(Tokyo).” the display 202 of the portable wireless telephone shown in drawing 77 by this -- the pair of a figure -- corresponding -- “-- ** -- method of float” is displayed.

[0004] The 2nd technique matches and memorizes numeric code and a fixed form sentence, and inputs the code corresponding to a desired fixed form sentence by actuation of a ten key 203 with reference to the code table of a fixed form sentence. For example, the character code train of a fixed form sentence presupposes that it memorizes corresponding to the code of double figures like drawing 80. In this case, if you want to input “telephone a firm”, “01” will be inputted by actuation of a ten key 203. Thereby, corresponding to the inputted code, “please telephone a firm” is displayed on the display 202 of the portable wireless telephone of drawing 77.

[0005]

[Problem(s) to be Solved by the Invention] However, according to the above-mentioned alphabetic character input unit, when there was no conversion table fundamentally, it could not key, but there was a trouble of being inconvenient. On the other hand, the portable wireless telephone which assigned each of a ten key 203 two or more kana alphabetic characters as shown in drawing 81 is known. In this equipment, the count and alphabetic character of actuation in each key are matched and memorized. If the corresponding alphabetic character at the left end of declared is inputted and the number of actuation increases 1 time below when the count of actuation is 1 in each key, the alphabetic character shifted rightward [declared] every [1] will be inputted. for example, -- “-- ** -- as shown in drawing 82, “444411122888111” and a ten key 203 are operated to obtain an input with method of float (Tokyo).” thereby -- the display 202 of the portable wireless telephone of drawing 77 -- the count of actuation of a key -- corresponding -- “-- ** -- method of float” will be displayed.

[0006] According to this alphabetic character input unit, although it became unnecessary [a conversion table] as mentioned above, the number of key strokes increased extremely and there was a trouble of causing an incorrect input accidentally [count / of the count of actuation] depending on the case. Moreover, although putting a figure in order by the word play and inputting was also performed in the selective-calling receiver etc., it is a premise to know the message concerning the digit string and the contents of the word play, and, generally there was a trouble of being user-unfriendly. Moreover, in a word play, there was also a message which cannot be expressed and there was also a problem that it could be hard to convey an intention to a partner exactly.

[0007] This invention was made in view of the trouble of the above conventional alphabetic character input units, the purpose has an unnecessary conversion table, and, moreover, it is offering the alphabetic character input terminal unit which can input a required message etc., without the number of key strokes increasing.

[0008]

[Means for Solving the Problem] This invention is characterized by providing the following in an alphabetic character input terminal unit according to claim 1, in order to instruct transliterations to be a dictionary means by which the digit string and the candidate character string were memorized by corresponding, and the ten key, with which two or more alphabetic characters were assigned, while a figure and a candidate alphabetic character correspond and are memorized. Conversion key The input means for inputting an alphabetic character or a character string including the definite key for making a conversion result decide The output means for displaying the candidate alphabetic character or candidate character string of a conversion result at least, and outputting it A transliteration means to search said dictionary means, to ask for a candidate alphabetic character or a candidate character string, and to send out this candidate alphabetic character or a candidate character string to said output means about the digit string corresponding to the figure corresponding to the ten key inputted from said input means, or two or more keys which were inputted, and a definite means decide one based on actuation of said definite key out of said called-for candidate alphabetic character or a candidate character string

[0009] In the alphabetic character input terminal unit of this application according to claim 2, while a figure and a candidate alphabetic character correspond and a dictionary means is memorized, a digit string and a candidate character string correspond, and are memorized, and the number of letters of said digit string is characterized by being more than the number of letters of said candidate character string.

[0010] In the alphabetic character input terminal unit of this application according to claim 3, it is characterized by for a transliteration means searching a dictionary means, asking for a candidate alphabetic character or a candidate character string, sending out this candidate alphabetic character or a candidate character string to an output means, and presenting a display with it, if the ten key with

which the alphabetic character of an input means was assigned is operated.

[0011] In the alphabetic character input terminal unit of this application according to claim 4 A candidate alphabetic character or a candidate character string is memorized in predetermined order by the dictionary means. A transliteration means If the ten key with which the alphabetic character of an input means was assigned is operated, will search a dictionary means and it will ask for the candidate alphabetic character of the 1st place, or a candidate character string. It is characterized by sending out this candidate alphabetic character or a candidate character string to an output means, presenting a display, asking for the 2nd place of subsequent candidate alphabetic characters or candidate character strings based on actuation of said conversion key, sending out this called-for candidate alphabetic character or candidate character string to an output means, and presenting a display.

[0012] In the alphabetic character input terminal unit of this application according to claim 5, a transliteration means is characterized by sending out these candidate alphabetic characters or a candidate character string to a predetermined individual [every] output means, and presenting a display, when a dictionary means is searched, it asks for a candidate alphabetic character or a candidate character string and there are two or more candidate alphabetic characters or candidate character strings.

[0013] In the alphabetic character input terminal unit of this application according to claim 6, a touch panel is prepared in the candidate alphabetic character of an output means, or the viewing area of a candidate character string, and it is characterized by to have a location detection means to detect the input actuated valve position in this touch panel, and a definite means make a conversion result decide based on correspondence relation with the display position of the detection result of this location detection means, a candidate alphabetic character, or a candidate character string.

[0014] In the alphabetic character input terminal unit of this application according to claim 7 A dictionary means by which a figure, the candidate alphabetic character of a digit string and a conversion result or a candidate character string, and its attribute information were matched and memorized, The ten key with which two or more alphabetic characters were assigned, and the conversion key for directing a transliteration, The input means for inputting an alphabetic character or a character string, and required information including the definite key for making a conversion result decide, The output means for displaying the candidate alphabetic character or candidate character string of a conversion result at least, and outputting it, An attribute specification means to specify the attribute of a candidate alphabetic character or a candidate character string based on the information inputted from said input means, About the digit string corresponding to the figure corresponding to the key inputted from said input means, or two or more keys which were inputted, search said dictionary means and it faces in quest of a candidate alphabetic character or a candidate character string. A transliteration means to ask for the candidate alphabetic character or candidate character string applicable to the attribute information specified by said attribute specification means, and to send out this candidate alphabetic character or a candidate character string to said output means, It is characterized by providing a definite means to decide one based on actuation of said definite key out of said called-for candidate alphabetic character or a candidate character string.

[0015] It carries out having the contents memory of directions the contents of directions for acquiring two or more modes and attributes concerning processing in the alphabetic character input terminal unit of this application according to claim 8 were matched and remembered to be, an attribute specification means detecting the mode under processing, acquiring the contents of directions corresponding to this mode from the above-mentioned contents memory of directions, and obtaining the attribute of the alphabetic character which starts an input based on these contents of directions, or a character string as the description.

[0016] The alphabetic character input terminal unit of this application according to claim 9 A cursor display means by which ***** <U> ** under input displays the cursor which shows the location of a character string on an output means on the occasion of the input of an alphabetic character or a character string, It has the cursor location memory the alphabetic character which starts an input corresponding to the location of this cursor, or the attribute information on a character string was matched and remembered to be. An attribute specification means It is characterized by acquiring the attribute of the alphabetic character concerning an input, or a character string from the display position of the cursor by the above-mentioned cursor display means, and the contents of the above-mentioned cursor location memory.

[0017] In the alphabetic character input terminal unit of this application according to claim 10, an attribute specification means is characterized by acquiring the attribute of the alphabetic character

concerning an input, or a character string according to the alphabetic character concerning the subsequent input inputted from an input means, or the contents of directions of the attribute of a character string.

[0018] The alphabetic character input terminal unit of this application according to claim 11 is characterized by having further a means to choose the alphabetic character or character string of which an operator is notified by said conversion key, and to notify it, when there are two or more the candidate alphabetic characters or candidate character strings which are called for.

[0019] This application this invention is characterized by providing the following in an alphabetic character input terminal unit according to claim 12, in order to assign two or more alphabetic characters to each key and to input a figure. Numerical keypad It is a dictionary means by which a digit string and a candidate character string correspond and are memorized while a figure and a candidate alphabetic character correspond and are memorized, and the number of letters of said digit string is more than number of letters of said candidate character string. A generating means for it to be combined with said dictionary means and to generate the candidate alphabetic character or candidate character string corresponding to said inputted figure or inputted digit string A display means to display said generated candidate alphabetic character or candidate character string, and a decision means to choose one from said displayed candidate alphabetic character or a candidate character string

[0020]

[Embodiment of the Invention] The alphabetic character input unit applied to the gestalt of operation of this invention with reference to an accompanying drawing below is explained. The explanation which gives the same sign to the same component and overlaps in each description of drawing is omitted. The front view of the portable wireless telephone with which the alphabetic character input unit concerning the gestalt of operation of this invention was applied to drawing 1 is shown. If a hand set 101 consists of a case of the shape of a little flat rectangular parallelepiped and it applies to the lower part from the center of a front face, the ten key (dialing key) 103 which consists of a key of four-line three trains is formed, and the display 102 for displaying information, such as an alphabetic character and a notation, is formed in the upper part. Moreover, receiver section 104A for hearing the voice sent is prepared above the display 102, and transmission section 105A for inputting voice is further prepared in the lower part location of a ten key 103.

[0021] The internal configuration of the above-mentioned portable wireless telephone is shown in drawing 2. The portable wireless telephone consists of speaking circuits 4 which send and receive a sound signal between this transceiver section 3, and an earphone 104 and a telephone transmitter 105. [the controller 1 which controls each part, the input section 2 for inputting information, the antenna 5 which performs transmission and reception of an electric wave, the transceiver section 3 which are connected to this antenna 5, and transmit and receive a signal, and] An earphone 104 and a telephone transmitter 105 correspond to receiver section 104A of drawing 1, and transmission section 105A, respectively. The controller 1 consists of a message control section 6 for performing control about a message, and the character input/output section 7 which performs character input/output processing based on the input from the input section 2. The message control section 6 controls arrival-of-the-mail control according to the terminating signal which comes through the dispatch control and the antenna 5 according to an input, and the transceiver section 3 from the input section 2, adjustment of the amplification degree to a speaking circuit 4, etc. Moreover, the message control section 6 has the function which sends out the data made transmit through the transceiver section 3 the data sent from the character input/output section 7 and received to the character input/output section 7. The mode change-over switch which switches the mode of operation as telephone and the actuation as an alphabetic character input device is formed in the input section 2. A hook switch is sufficient as this mode change-over switch, and when using a hook switch, it serves as a mode of operation as an alphabetic character input unit at the time of on hook.

[0022] The block diagram when the portable wireless telephone of drawing 1 becomes a mode of operation as an alphabetic character input unit is shown in drawing 3. This configuration is a part which consists of the input section 2 and the character input/output section 7 in drawing 2. It is characterized by equipping an alphabetic character input unit with the following. The keyboard 11 for inputting an alphabetic character etc. The input-control section 12 which incorporates the information on the key stroke in a keyboard 11, and is sent out to the CC section 13 The CC section 13 which carries out generalization control of each part of an alphabetic character input unit The word dictionary 14 which is a dictionary means 310 by which the input-statement character, the candidate alphabetic character of an input string and a conversion result, or the candidate character string was matched and memorized,

The dictionary retrieval section 15 which obtains the candidate alphabetic character or candidate character string which corresponds with reference to the word dictionary 14 about the input-statement character or input string given from the CC section 13, The display 16 which consists of LCD as which information, such as an alphabetic character, is displayed, and the display and control section 17 which performs control for making a display 16 display a candidate alphabetic character or a candidate character string on the bottom of control of the CC section 13 Two or more kana alphabetic characters are assigned to several character each key of the ten key 103 of a keyboard 11 every. that is, five characters of the “**” line of the Japanese kana syllabary assign the “1” key of the numerical keypad of arrangement of the usual dialing key -- having -- the “2” keys -- the Japanese kana syllabary -- “-- it is -- five characters of” line are assigned and the kana alphabetic character is assigned by the “0” keys like the following. “8 [however,]” key -- “**” and “**” -- “-- ” is assigned and “**”, “**”, “**”, and “--” are assigned to the “0” keys. Moreover, the “*” key is used as conversion / next candidate key, and let the “#” key be a definite key. Two or more keys to which, as for the keyboard 11, two or more kana alphabetic characters were assigned in the above, It is the input means 300 for inputting an alphabetic character or a character string including the conversion / next candidate key for directing a transliteration, and the definite key for making a conversion result decide. A display 16 It is the output means 330 for displaying the candidate alphabetic character or candidate character string of a conversion result at least, and outputting it. The CC section 13 and the dictionary retrieval section 15 About the alphabetic character corresponding to the key inputted from the input means 300, or the inputted character string of two or more key correspondences The above-mentioned dictionary means 310 is searched, it asks for a candidate alphabetic character or a candidate character string, and a transliteration means 320 to send out this candidate alphabetic character or a candidate character string to the above-mentioned output means 330 is constituted.

[0023] The configuration of the above-mentioned keyboard 11 is shown in drawing 4. The key matrix 10 is established corresponding to each key of a ten key 103, the electrical potential difference of 5V is always given to one contact of each switch of the key matrix 10 through a pull-up resistor and direction Rhine Out0-Out3 of a low (row), and the endpoint in direction Rhine Out0-Out3 of a low has resulted to the input-control section 12. Moreover, direction Rhine M0-M2 of a column (column) was connected to the contact of another side of each switch of the key matrix 10, and the endpoint in direction Rhine M0-M2 of a column has resulted to the input-control section 12.

[0024] On the other hand, the input-control section 12 is constituted as shown in drawing 5. the control section 20 and timer 21 with which the input-control section 12 controls the whole, the memory table 22, and memory (MEM2) -- 23 and memory (MEM1) -- it is constituted by 24 and latches 25 and 26. Latch 25 is a circuit which latches the drive signal over direction Rhine M0-M2 of a column sent out from a control section 20, and is a circuit which latch 26 incorporates the signal of direction Rhine Out0-Out3 of a low, and is latched. The timer 21 is formed that the chattering generated at the time of a key stroke should be removed, and in order to read a key stroke into a duplex, it notifies predetermined time spacing (1mS) to a control section 20. The drive signal outputted to the latch 25 is set to memory 23, and the detecting signal then held at the latch 26 is set to memory 24. It seems that data for the memory table 22 to specify the operated key are stored, and the contents are shown in drawing 6. That is, three patterns with which the data set to memory 23 make one set M2-M0 of bottom of MEM2 3 column at each time of the set value “0” of MEM2 of drawing 6, “1”, and “2” correspond, respectively, and being set to latch 25 is shown. Therefore, if either of three patterns on a par with the longitudinal direction which makes one set M2-M0 of bottom of MEM2 3 column is set to latch 25 Corresponding to this, one of the figures of the set value “0” in MEM2 of drawing 6, “1”, and “2” is set to memory 23, and this is received. For latch 26 Either of four patterns which make one set Out3-Out1 on a par with the longitudinal direction of right 4 column of MEM1 of drawing 6 is set, and this value is set to memory 24. For this reason, the figure of the key by which the figure of the location of the intersection of the set value “0” of MEM2, “1” or, and “2” was operated will be shown. [either of four patterns on a par with the longitudinal direction of MEM1 of drawing 6 and] For example, if “1” is set to memory 23 and “1011” is set to memory 24, the code which shows the “5” keys will be outputted from the memory table 22. At this time, latch 25 is shown that “101 (M2-M0=)” was set.

[0025] Since a control section 20 performs key reading by the program of the flow chart shown in drawing 7, actuation of a control section 20 is explained according to this flow chart. First, latch 25 is made to latch a signal that “0” should be outputted to all direction Rhine M0-M2 of a column (S1), and it supervises that “0” appears in either of direction Rhine Out0-Out3 of a low based on the signal latched to latch 26 (S2). If “0” appears, with reference to a timer 21, the signal of the waiting for 1mS

(S3) and direction Rhine Out0-Out3 of a low will be incorporated from latch 26, and it will set to memory 24 (S4). Furthermore, with reference to a timer 21, the signal of the waiting for 1mS (S5) and direction Rhine Out0-Out3 of a low is incorporated from latch 26, and it detects whether it is equal to the contents already set to memory 24 (S6). It is here, and when not equal, it returns to step S2 again, and actuation is continued. On the other hand, when the 1st time and the 2nd reading result are equal While making latch 25 latch a signal "110 (=M2M1M0)" that "0" should be outputted only to direction Rhine M0 of a column "0" is set to memory 23 (S7), and it detects whether "0" is in either of the signals of direction Rhine Out0-Out3 of a low latched to latch 26 (S8). That is, if either of four keys connected to direction Rhine M0 of a column of drawing 4 is operated when "0" is outputted only to direction Rhine M0 of a column, "0" will appear in either of the signals of direction Rhine Out0-Out3 of a low. Here, if there is "no 0" in all of the signal of direction Rhine Out0-Out3 of a low, while making latch 25 latch a signal "101" that "0" should be outputted only to direction Rhine M1 of a column, it detects whether "0" is in either of the signals of direction Rhine Out0-Out3 of a low which sets "1" to memory 23 and is latched to (S9) and latch 26 (S10). That is, if either of four keys connected to direction Rhine M1 of a column of drawing 4 is operated when "0" is outputted only to direction Rhine M1 of a column, "0" will appear in either of the signals of direction Rhine Out0-Out3 of a low. Furthermore, if there is "no 0" in all of the signal of direction Rhine Out0-Out3 of a low, while making latch 25 latch a signal "011" here that "0" should be outputted only to direction Rhine M2 of a column "2" is set to memory 23 (S11), and it detects whether "0" is in either of the signals of direction Rhine Out0-Out3 of a low latched to latch 26 (S12). That is, if either of four keys connected to direction Rhine M2 of a column of drawing 4 is operated when "0" is outputted only to direction Rhine M2 of a column, "0" will appear in either of the signals of direction Rhine Out0-Out3 of a low.

[0026] If "0" does not appear as a result of the above processing, without neither of the cases requiring the signal of direction Rhine Out0-Out3 of a low If it returns to step S1, actuation is continued and "0" appears at either of the signals of direction Rhine Out0-Out3 of a low in one case of the above-mentioned steps S8, S10, and S12 The signal of direction Rhine Out0-Out3 of a low is incorporated from latch 26, and it sets to memory 24 (S13). Next, an output is directed on the memory table 22, retrieval of the memory table 22 is performed based on the signal set to these result memories 23 and 24 (S14), and a control section 20 sends out the code of the key outputted from the memory table 22 to the CC section 13. Next, latch 25 is made to latch a signal that "0" should be outputted to all direction Rhine M0-M2 of a column (S15). It detects whether all direction Rhine Out0-Out3 of a low was set to "1" (S16). (did it restore?) If it will detect whether all direction Rhine Out0-Out3 of a low was set to "1" after progress of 1mS (S17) with reference to the timer 21 after detection if oar "1" is obtained (S18), and (did it restore?) oar "1" is obtained, it will return to step S1 and actuation will be continued. The code (for example, code corresponding to a figure) which shows whether which key of a ten key 103 was operated as mentioned above is sent out to the CC section 13.

[0027] The detail configuration of the display and control section 17 of the above-mentioned alphabetic character input unit is shown in drawing 8. The display and control section 17 consists of character location memory 34 for memorizing the alphabetic character font memory 31 the character font (character pattern) was remembered to be, the character-font expansion section 32 which develops the font of this alphabetic character font memory 31 to an image memory 33 by control of the CC section 13, the image (bit map) memory 33 which holds the image data displayed on an indicating equipment (LCD) 16 by the bit map, and display font data (character code) on display with a display position.

[0028] The location data (address) of display font data, display-position data, an expansion initiation indication signal, and the character location memory 34 are given to the above-mentioned display and control section 17 from the CC section 13. That is, with an expansion initiation indication signal, by sending display font data, the character-font expansion section 32 takes out the display font corresponding to the display font data which accessed the alphabetic character font memory 31 and was given, and stores it in the correspondence location of an image memory 33 based on display-position data (coordinate of an image memory 33). Thereby, since the data location of the image memory 33 is matched with the pixel of the screen of the LCD indicating equipment 16 by 1 to 1, the pixel data of the display font developed by the location of relevance are memorized. On the other hand, it memorizes in the location of the location data with which display font data and display-position data are sent to the character location memory 34 from the CC section 13. The CC section 13 can read this using a lead signal, can read data (display font data) on display with the display-position data, and can process transmitting to other terminals through the message control section 6, the transceiver section 3, and the antenna 5 of drawing 2 etc.

[0029] The detail configuration of the dictionary retrieval section 15 of the above-mentioned alphabetic character input unit is shown in drawing 9. The dictionary retrieval section 15 consists of retrieval result alphabetic character output buffers 43 for holding the code of the control section 40 which carries out generalization control of this dictionary retrieval section 15 whole, the alphabetic character input buffer 41 which stores the code of the alphabetic character which it keyed, or a character string, the code pointer 42 used at the time of dictionary retrieval of the word dictionary 14, the candidate alphabetic character obtained as a result of dictionary retrieval, or a character string.

[0030] The contents memorized by the word dictionary 14 are shown in drawing 10. That is, corresponding to the code of the figure by actuation of a ten key 103, attribute information, such as an alphabetic character with the alphabetic character in a kana or a character string, and the kanji or a character string and a part of speech, a location, and time amount, and the dictionary information which consists of information on other are matched and memorized. More specifically, the configuration of the word dictionary 14 is constituted as shown in drawing 13 from drawing 11. First, the word dictionary 14 consists of blocks classified in the number of alphabetic characters as it is shown in drawing 11. Each block corresponding to the number of alphabetic characters consists of two or more branches corresponding to the digit string of the number of alphabetic characters concerned as it is shown in drawing 12. Here, two or more branches corresponding to the digit string of five characters exist in the block whose number of alphabetic characters is five characters, the branch corresponding to the digit string in it "41281" is specified, and the predetermined number character is shown by "*" in other branches. Furthermore, the interior of the branch corresponding to a digit string "41281" is shown in drawing 13. in the branch, the table corresponding to SOS (00) which shows the head of the candidate corresponding to the table (therefore -- the case where a consecutiveness figure is with (1) and (8) -- two tables) corresponding to (9), and a digit string in case there is no consecutiveness figure is contained from the consecutiveness figure in the case of existing (0). The consecutiveness figure of correspondence, the pointer NTP of degree table, and the pointer NBP of degree branch are set to the table corresponding to (9) from the consecutiveness figure (0). On the other hand on the table corresponding to SOS (00) The code SOS which shows the head of a candidate (that is, it corresponds to a digit string "41281" in this example) in case there is no consecutiveness figure (00) The code EOB (FF) which shows termination of the code EOS (FF) which shows termination of an alphabetic character or character string code Str1 - Strn (n candidate is expressed with character code from 1 to n), and candidate alphabetic character or a candidate character string code, and a branch is set. When there are two or more candidates, the coat SOS (00) in which a candidate's head is shown is registered also among two or more candidates. When making attribute information memorize, it is each candidate's character string code Str1 - Strn, next is set with the sign which shows that it is attribute information.

[0031] As mentioned above, two or more candidate alphabetic characters or candidate character strings exist in 1 branch, because two or more kana alphabetic characters were assigned [not only according to a homonym existing but] to one key like the usual Japanese word processor. for example, the case where the "1" key and the "2" keys are operated continuously -- a "*" line -- " -- it is -- since it is the input of the character string of" line, "red (dirt)", "autumn (vacancy)", "a pond (go)", "a bucket (set) etc.", etc. exist as a candidate character string. in the case of the digit string "41281" of the instantiation to drawing 13, "Tokyo (obtaining today)", "offer (**** today) etc.", etc. exist. In the above-mentioned example, the candidate of a contracted sound, the candidate of dulness, the candidate of a p-sound, etc. are transposed to Kiyone, and it has dictionary-ized so that clearly.

[0032] Since the control section 40 of the dictionary retrieval section 15 shown in drawing 9 performs retrieval processing of the word dictionary 14 by the program of the flow chart shown in drawing 14, it explains actuation of a control section 40 according to this flow chart. A control section 40 clears the alphabetic character input buffer 41 (S21), and it waits for the code (code of a numerical keypad) of an input-statement character or an input string to come (S22). an operator shows ST1 of drawing 15 in this example -- as -- " -- * -- obtaining -- today -- " -- it considers as an input-statement character. Then, an operator will operate the correspondence key of the ten key 103 of a portable wireless telephone. In the ten key 103 of this drawing 15, it differs in the ten key 103 of drawing 1, a kana alphabetic character is written by the keytop itself which has round four corners, and, moreover, the kana alphabetic character serves as katakana instead of a hiragana. Even if this character input unit is the ten key 103 of the gestalt of operation of drawing 1, and it is the ten key 103 of this drawing 15, it shows that a suitable input is possible. The numerical keypad of a ten key 103 is operated with "41281", as shown in ST2 of drawing 15. An operator shows that it inputted by asking for the kana alphabetic character enclosed with the frame among the kana alphabetic characters corresponding to "41281" of

ST2.

[0033] Then, the code corresponding to the numerical keypad concerning actuation is obtained by actuation of the input-control section 12 explained in drawing 7, and the code train corresponding to the above "41281" is stored in the alphabetic character input buffer 41. Next, an operator operates the "*" key which are conversion / next candidate key in quest of conversion, as shown in ST3 of drawing 15. By actuation of the input-control section 12 explained in drawing 7 also about the this "*" key, it is changed into a code and sent out to the CC section 13. The CC section 13 which received this sends out a retrieval start signal to the control section 40 of drawing 9. Then, as shown in drawing 14, the control section (S23) 40 which was supervising whether it was a retrieval start resets the code pointer 42 (S24), and makes a data selector signal a set condition (S25). Next, a control section 40 takes out the code stored in the alphabetic character input buffer 41 from a head, and begins retrieval from the block with one alphabetic character of the word dictionary 14. Since the technique of retrieval is the same also about the figure of what position, here explains from the retrieval in the block with three alphabetic characters.

[0034] The processing from the retrieval in the block with three alphabetic characters is shown in drawing 16. According to a digit string "412", the table of the address "3F0F" of the block with three alphabetic characters is reached. The consecutiveness figure of this table is "1", and since it differs from the 4th figure "8" of the digit string "41281" stored in the alphabetic character input buffer 41, the following table is searched based on NTP. Here, since only the candidate whose figure following a digit string "412" is "1", and the candidate who is "8" exist, the consecutiveness figure can be searching the table of "8" instantly. usually, a consecutiveness figure -- the table of "1", for the table of "2", and its degree, a consecutiveness figure is [the degree of the table of "1" / a consecutiveness figure] "3" ... as -- it carries out and a consecutiveness figure reaches the table of "8."

[0035] If a consecutiveness figure is in agreement, based on NBP of this table, the 1st table of a branch with four alphabetic characters "4128" will be reached. On the table here, a consecutiveness figure is "1" and it is in agreement with the 5th figure "1" of the digit string "41281" stored in the alphabetic character input buffer 41. If a consecutiveness figure is in agreement, the table of the following branch "41281" will be reached based on NBP of this table. Here, since there is originally no consecutiveness figure stored in the alphabetic character input buffer 41, the table on which "00" is set to the area of a consecutiveness figure is searched. In the example of this drawing 16, it is premised on that there is no candidate with the figure which follows a digit string "41281" also in the word dictionary 14, i.e., there is no table, and the table of the address "98AC" with which "00 (=SOS)" is immediately set to the area of a consecutiveness figure is reached from the table of a branch "4128."

[0036] In the example of drawing 16, "Tokyo" is set to the 1st candidate character string, and the code of "Tokyo" is read corresponding to the output value "0" of the code pointer 42. The above processing is equivalent to processing of the loop formation of steps S26, S27, and S28 from "retrieval" of step S25 in drawing 14. Also when directing and reading each candidate alphabetic character, stepping of the code pointer 42 in step 27 corresponds in the target table, while corresponding, when retrieving the table in drawing 16 sequentially. Therefore, the retrieval of a candidate alphabetic character currently performed in drawing 16 in practice is equivalent to the case where the word dictionary 14 shown in drawing 10 is being searched. In addition, although "Tokyo" was obtained in this example If the candidate alphabetic character corresponding to the inputted digit string is not memorized in the word dictionary 14 When a NEXT signal is given to the code pointer 42, stepping of the value is carried out (S27), the loop formation from step S28 to step S26 is repeated and a candidate alphabetic character or a candidate character string finally cannot be detected, in step S28, it branches to YES. That is, an END signal is returned from the code pointer 42. Then, a control section 40 sends out "he has no relevance" to the CC section 13 using retrieval result information. The CC section 13 which received "he has no relevance" displays the purport which sends out the character font of "having no relevance" to a display and control section 17, and does not have the corresponding candidate on the LCD display 16 (S29).

[0037] The code of "Tokyo" obtained as mentioned above is outputted to the retrieval result alphabetic character output buffer 43 (S30). The notice of a result output is given to the CC section 13 using retrieval result information, and the code of "Tokyo" is incorporated by the CC section 13 from the retrieval result alphabetic character output buffer 43, is further sent to a display and control section 17, it is carried out as it was explained in explanation of drawing 8, and the display in a display (LCD) 16 is presented with it. That is, "Tokyo" is displayed on a display (LCD) 16. The control section 40 of the dictionary retrieval section 15 is supervising actuation of a definite key, or actuation of a next candidate

key (S31, S32). Actuation of a definite key or actuation of a next candidate key is sent out from the input-control section 12 like the case of actuation of the above-mentioned conversion key to the CC section 13.

[0038] In the example of drawing 15, since "Tokyo" is a desired alphabetic character, as shown in ST4, the definite key is operated. The CC section 13 obtains the code of a definite key, and makes a retrieval start signal change inactively. In response, the control section 40 of the dictionary retrieval section 15 branches from step 31 to YES, and makes the above-mentioned candidate alphabetic character decide. In addition, the word dictionary 14 -- "41281" -- corresponding -- a hiragana -- " -- ** -- obtaining -- today -- ", when "Tokyo" of the kanji is stored in order A next candidate key is operated to a display. It is shown to ST5 of drawing 15 by the parenthesis -- as -- first -- a hiragana -- " -- ** -- obtaining -- today -- " -- This gives a NEXT signal to the code pointer 42, stepping of the value is carried out (S27), the code of "Tokyo" of the kanji of the next candidate is obtained, and it progresses to S30 from step S26. Also in this case, since "Tokyo" of the kanji is a desired alphabetic character, as shown in ST4, a definite key is operated. Processing will be performed by subsequent processings like the above-mentioned.

[0039] Since two or more kana alphabetic characters are assigned to each key and the alphabetic character input unit applied to the gestalt of the 1st operation as above is equipped with conversion / next candidate key, and a definite key, it can input appropriately the candidate character string which consists of combination of the kana character string assigned to the candidate alphabetic character corresponding to the kana alphabetic character assigned to the operated key, or two or more keys which were operated, and can choose it. That is, it is suitable for an information terminal with few keys.

[0040] If the "*" key which are conversion / next candidate key is not operated with the gestalt of implementation of the above 1st, since any display is not made by the display 102, it does not know whether to be that the right key stroke is made, and operability is not necessarily good. So, with the gestalt of the 2nd operation, the program corresponding to the flow chart of drawing 14 with which the control section 40 of the dictionary retrieval section 15 is equipped is replaced with the program corresponding to the flow chart of drawing 17. That is, in step S22, a control section 40 waits for the code (code of a numerical keypad) of an input-statement character or an input string to come. If the numerical keypad of a ten key 103 is operated, the CC section 13 will be transmitted to the display-control section 17, as shown in step S100 of drawing 17, while it stores the code corresponding to this in the alphabetic character input buffer 41. Thus, if a ten key 103 is operated, the dictionary retrieval section 15 (control section 40) will detect the code (code of a figure) corresponding to this key, and will function as a code sending-out means with which sends out to a display and control section 17, and a display is presented. In a display and control section 17, this is patternized and the figure which writes in and corresponds to an image memory 33 is displayed. Although the control section 40 is supervising actuation of the "*" key which are conversion / next candidate key (S23), if this code corresponding to "*" key does not come, it returns to step S22 and waits for arrival of the code (code of a numerical keypad) of an input-statement character or an input string.

[0041] " -- ** -- obtaining -- today -- ", when it corresponds and keys with "41281" The actuation is [that "4", "41", ..., "41281" and the figure corresponding to the operated key increase, and is displayed as shown in drawing 18 for every actuation of each key, and the key input is received, and] infallible, that is, " -- ** -- obtaining -- today -- " -- it can check that the numerical keypad to which each kana alphabetic character is assigned is operated. When the "*" key which are conversion / next candidate key is operated, the transliteration using the word dictionary 14 is performed like the gestalt of the 1st operation, the code of the candidate alphabetic character which corresponds from the word dictionary 14 is read, and this is replaced with the display of the above-mentioned digit string "41281", and is displayed. In addition, the 1st candidate character string of the table corresponding to the digit string "41281" of the word dictionary 14 at the example of drawing 18 -- " -- ** -- obtaining -- today -- " -- having become a hiragana notation is shown.

[0042] The flow chart corresponding to the program with which the control section 40 of the dictionary retrieval section 15 in the alphabetic character input device concerning the gestalt of the 3rd operation equips drawing 19 is shown. Also in the gestalt of this operation, a control section 40 waits for the code (code of a numerical keypad) of an input-statement character or an input string to come in step S22. If the numerical keypad of a ten key 103 is operated, the CC section 13 will transmit the line alphabetic character corresponding to a figure to a display and control section 17, as shown in S110 of drawing 19, while storing the code corresponding to this in the alphabetic character input buffer 41. That is, the CC section 13 has the translation table of numeric code and a line alphabetic character, obtains a line

alphabetic character from numeric code, and transmits it to a display and control section 17. In a display and control section 17, this is patternized and the alphabetic character which writes in and corresponds to an image memory 33 is displayed. if the above-mentioned table is explained in full detail -- the code of "1", and the code of "**" and the code of "2" -- " -- it is -- " -- a code and the code of "3" -- " -- they are the code of ", ..., the table on which the code of "0" and the code of "**" were matched. [0043] Although the control section 40 is supervising actuation of the "*" key which are conversion / next candidate key (S23), if this code corresponding to "*" key does not come, it returns to step S22 and waits for arrival of the code (code of a numerical keypad) of an input-statement character or an input string, as shown in drawing 19. the case of the gestalt of the 1st operation -- the same -- "*" -- obtaining -- today -- ", when it corresponds and keys with "41281" As shown in drawing 20, for every actuation of each key "**", "****", ..., "***** and **", the line alphabetic character corresponding to the operated key increasing, and being displayed, and the key input being received and its actuation are infallible -- things -- that is, -- " -- ** -- obtaining -- today -- " -- it can check that the key to which each kana alphabetic character is assigned is operated. When the "*" key which are conversion / next candidate key is operated, the transliteration using the word dictionary 14 is performed like the gestalt of the 1st operation, the code of the candidate alphabetic character which corresponds from the word dictionary 14 is read, and this is replaced with the display of a top Noriyuki character string "***** and **", and is displayed. in addition, the 1st candidate character string of the table corresponding to the digit string "41281" of the word dictionary 14 at the example of drawing 20 -- " -- ** -- obtaining -- today -- " -- having become a hiragana notation is shown.

[0044] In the gestalt of implementation of the above 3rd, the modification of the gestalt of the 3rd operation which displays a line alphabetic character in Roman alphabet is shown in drawing 21. In the case of this modification, on the table with which the CC section 13 is equipped, the code of "1", the code of "A" and the code of "2", the code of "K" and the code of "3", the code of "S", ... and the code of "0", and the code of "W" are matched. therefore -- " -- ** -- obtaining -- today -- ", when it corresponds and keys with "41281" As shown in drawing 21, for every actuation of each key "T", "TA", ..., "TAKYA", the line alphabetic character corresponding to the operated key increasing, and being displayed, and the key input being received and its actuation are infallible -- things -- that is, -- " -- ** -- obtaining -- today -- " -- it can check that the key to which each kana alphabetic character is assigned is operated. in addition, the memory table 22 with which the input-control section 12 shown in drawing 5 is equipped as other configurations although changed with the gestalt of this 3rd operation on the table with which the CC section 13 is equipped -- a hiragana -- the alphabetic character of a line name -- or it is also possible to obtain the alphabetic character of a line name in Roman alphabet. In this case, do not make a figure, a digit string and a candidate alphabetic character, or a candidate character string correspond, make the alphabetic character, the character string and the candidate alphabetic character, or candidate character string of a line name of a hiragana correspond, or the alphabetic character, the character string and the candidate alphabetic character, or candidate character string of a line name of a Roman alphabet is made to correspond, and the word dictionary 14 also constitutes. Thus, even if constituted, of course, that it can check that the key input is received and that the actuation is infallible can obtain a suitable alphabetic character and a character string in the input by the small number of keys like the gestalt of the 1st operation.

[0045] The flow chart corresponding to the program with which the control section 40 of the dictionary retrieval section 15 in the alphabetic character input device concerning the gestalt of the 4th operation equips drawing 22 is shown. With the gestalt of this operation, without supervising actuation of the "*" key which are conversion / next candidate key, a control section 40 resets the code pointer 42 (S24), makes a data selector signal a set condition (S25), takes out further the code stored in the alphabetic character input buffer 41 from a head, and begins retrieval from the block with one alphabetic character of the word dictionary 14.

[0046] the gestalt of this 4th operation -- setting -- " -- ** -- obtaining -- today -- " -- when it corresponds and keys with "41281", as shown in drawing 23, "**", "**", "standby", ..., "Tokyo" are displayed for every actuation of each key. That is, the 1st candidate of the table of the candidate alphabetic character corresponding to "4" of the word dictionary 14 is "**." The 1st candidate of the table of the candidate alphabetic character corresponding to "41" of the word dictionary 14 is "**." The 1st candidate of the table of the candidate alphabetic character corresponding to "412" of the word dictionary 14 is "standby." When the 1st candidate of the table of the candidate alphabetic character corresponding to "4128" of the word dictionary 14 is "leaving" and the 1st candidate of the table of the candidate alphabetic character corresponding to "41281" of the word dictionary 14 is

"Tokyo" The candidate alphabetic character or candidate character string changed in above order is displayed without operating conversion / next candidate key in any way.

[0047] Unless conversion / next candidate key is operated, a display is presented with a current retrieval result (S33), it returns to step S22, and processing is continued. Moreover, when a purport without the corresponding candidate is displayed on the LCD display 16 (S29), it sets. Actuation of a definite key, or a conversion / next candidate key is detected (S34, S35), if these key strokes do not exist, it will return to step S22 and processing will be continued. The above-mentioned step S34, Or in S35, if a definite key, or conversion / next candidate key is operated, it will be made to shift to exception processing. For this reason, when the gestalt of this example does not have the candidate alphabetic character or candidate character string corresponding to a figure in the middle of an input, it will have a configuration corresponding to unjust actuation in which a definite key, or conversion / next candidate key is operated.

[0048] In addition, since it avoids becoming having no candidate alphabetic character in the middle of an input, the alphabetic character of the line name concerned can also be assigned to several characters each of the word dictionary 14. In this case, as a result of conversion, as shown in drawing 20, the alphabetic character of a line name is displayed. Moreover, in order to show that it is as a result of [when not operating conversion / next candidate key] conversion, the display result of the modification which set the 1st original candidate's hiragana code is shown to the 1st candidate of the table of the candidate alphabetic character corresponding to the figure or digit string of the word dictionary 14 at drawing 24. That is, the 1st candidate of the table of the candidate alphabetic character corresponding to "4" of the word dictionary 14 is "**," the 1st candidate of the table of the candidate alphabetic character corresponding to "41" of the word dictionary 14 -- "-- it is -- it is -- " -- it is -- The 1st candidate of the table of the candidate alphabetic character corresponding to "412" of the word dictionary 14 is "good [**]." the 1st candidate of the table of the candidate alphabetic character corresponding to [the 1st candidate of the table of the candidate alphabetic character corresponding to "4128" of the word dictionary 14 is "*****", and] "41281" of the word dictionary 14 -- "-- ** -- obtaining -- today -- " -- it is . thereby, when it keys with "41281", it is shown in drawing 24 for every actuation of each key -- as -- "**" -- "-- it is -- it is -- " -- "-- ** stylish" and ... "-- ** -- obtaining -- today -- " -- it is displayed. Thus, it is clear for a hiragana alphabetic character to be displayed according to a key stroke, and not to operate conversion / next candidate key, and it can know whether moreover it has inputted correctly.

[0049] Although only one conversion candidate was displayed, when there are two or more the candidate alphabetic characters or candidate character strings of conversion, with the gestalt of the 5th operation, these are expressed as the gestalt of each above-mentioned implementation a predetermined individual every. The important section of the flow chart corresponding to the program with which the control section 40 of the dictionary retrieval section 15 in the alphabetic character input device concerning the gestalt of the 5th operation equips drawing 25 is shown. With the gestalt of this 5th operation, steps S30-S32 of drawing 14 of the gestalt of the 1st operation and processing corresponding to S27 are performed, as shown in drawing 25. That is, when taking out a candidate from the word dictionary 14, the candidate to the existing predetermined individual is taken out, and it outputs to the retrieval result alphabetic character output buffer 43 with a selection figure (S30-A). Thereby, "Tokyo", "offer", "Tokyu", and "****" are displayed on the display screen of a display 102 with the selection figures 1-4 so that drawing 26 may show caudad.

[0050] A control section 40 makes this candidate alphabetic character decide the input of a selection figure, when it is inputted, waiting (S31-A) and. Moreover, if there is no input of a selection figure, actuation of a next candidate key will be detected (S32) and a next candidate key will be operated, stepping of the code pointer 42 will be carried out [above-mentioned] several predetermined candidate minutes (the example of above-mentioned drawing 26 four pieces) (S27-A), and it will progress to retrieval of other candidates. Thus, with the gestalt of the 5th operation, since these are indicated by coincidence and selection is presented when two or more candidates exist, it is effective in the ability to decide a candidate alphabetic character quickly.

[0051] The block diagram of the alphabetic character input unit concerning the gestalt of the 6th operation is shown in drawing 27. With the gestalt of this operation, the touch panel 50 stuck on the screen of an indicating equipment 16 is formed, and input-control section 12-A detects the actuation input coordinate value from this touch panel 50. That is, as shown in a display 16 in the screen of the considerable display 102 at drawing 29, the transparence sheet 51 is stuck. A transparent electrode 52 is formed in the lower predetermined location of the transparence sheet 51, and the transparence

counterelectrode 53 is formed in the location on the screen which counters a transparent electrode 52 through the different direction conductive rubber of transparency etc. The transparency counterelectrode 53 which counters the transparent electrode 52 of the lower predetermined location of the transparency sheet 51, and a transparent electrode 52 Four pieces are prepared as shown in drawing. To these It carried out as [explained / like the key matrix explained in drawing 4, / direction Rhine of a column and direction Rhine of a low were connected, and / from drawing 4 / in drawing 7], and input-control section 12-A has detected whether which location was operated. That is, input-control section 12-A constitutes a location detection means 55 to detect the input actuated valve position in a touch panel 50.

[0052] The flow chart corresponding to the program with which the control section 40 of the dictionary retrieval section 15 in the alphabetic character input device concerning the gestalt of the 6th operation equips drawing 28 is shown. With the gestalt of this operation, steps S30-S32 of drawing 14 of the gestalt of the 1st operation and processing corresponding to S27 are performed, as shown in drawing 28. That is, when taking out a candidate from the word dictionary 14, the candidate to the existing predetermined individual is taken out, and it outputs to the retrieval result alphabetic character output (for LCD display) buffer 43 with the alphabetic character (or "scrolling") of the "next candidate" (S30-A). Thereby, a display and control section 17 displays "Tokyo", "offer", "Tokyu", and the "next candidate" on the location of the transparent electrode 52 of the display screen of a display 102 so that drawing 29 may show caudad (S36). A control section 40 detects the actuated valve position in a touch panel 50 (S37), detects the candidate alphabetic character currently displayed by corresponding based on the coordinate of an actuated valve position (S38), and makes this candidate alphabetic character decide (S40). Thus, the dictionary retrieval section 15 functions as a definite means.

[0053] Moreover, when actuation of a next candidate key is detected, (S38) and the pointer for a display are changed (S39), stepping of the code pointer 42 is carried out [above-mentioned] several predetermined candidate minutes (the example of above-mentioned drawing 29 three pieces) (S27-A), and it progresses to retrieval of other candidates. That is, when it exists by advancing these by three pieces when [both] the pointer for displaying a candidate about the candidate character string of the table on which the word dictionary 14 corresponds, and the pointer for retrieval of the candidate alphabetic character out of the table of the word dictionary 14 are common, the following three candidates are taken out and it is displayed. Thus, with the gestalt of the 6th operation, when two or more candidates exist, since [with a touch panel 50] these are indicated by coincidence and it is selectable, it is effective in the ability to decide a candidate alphabetic character quickly certainly.

[0054] The keyboard 11 is equipped with cursor movement keys 61 and 62 and the elimination key 63 while displaying Cursor C for the alphabetic character input unit concerning the gestalt of each operation of this invention correcting an input-statement character etc., as shown in drawing 30. Here, in order to perform character representation for one line, although cursor movement keys 61 and 62 are constituted by the key of the pair of a longitudinal direction, when adopting the configuration which performs character representation of two or more lines, in addition to this, the cursor movement key of the pair of the vertical direction is prepared. The actuation information on cursor movement keys 61 and 62 is also detected by the input-control section 12, and is given via the CC section 13 to a display and control section 17. [as well as the actuation information on other keys explained by drawing 7 from drawing 4]

[0055] A display and control section 17 indicates the cursor C by migration per one-character viewing area about a cursor display at descending of a character representation field based on a cursor pointer. And a display and control section 17 is controlled by the program which shows a cursor pointer to the flow chart of drawing 31 based on the input of an alphabetic character, and the actuation information on a cursor movement key. That is, if arrival of a character code is detected (S41) and a character code comes, 1 stepping of the cursor pointer will be carried out (S42). By this, Cursor C moves forward by one character. Moreover, if arrival of the actuation information on a cursor movement key detects whether the cursor advance arose (S43) and actuation information does not come it when a character code does not come, it returns to step S41 and a monitor is continued, and if a cursor advance arises, a cursor pointer will be fluctuated according to the migration direction (S44). By this, Cursor C will move forward or retreat per one character. When correcting the alphabetic character of an incorrect input, it moves to the character position which should correct Cursor C by cursor movement keys 61 and 62, the elimination key 63 is operated and eliminated, and a right alphabetic character is inputted. In this case, although a display will not be performed with the gestalt of the 1st operation if it is not after operating conversion / next candidate key, in exception processing after displaying on the LCD display

16 a purport without the candidate to whom step S29 corresponds, like the gestalt of the 2nd operation, an input figure or an input digit string is displayed, and correction is guaranteed here. That is, in exception processing, the digit string set to the character string input buffer 41 is sent out to a display and control section 17. If conversion / next candidate key is operated after correction, processing after step S23 of the flow chart of drawing 14 will be performed.

[0056] The block diagram of the alphabetic character input unit concerning the gestalt of the 7th operation is shown in drawing 32. With the gestalt of this operation, retrieval SW(switch) 18 is again connected to the CC section 13, when the purport which does not have the corresponding candidate as a result of word dictionary retrieval is displayed on the LCD display 16, it can change about an input-statement character or an input string, and the directions to which conversion by dictionary retrieval is made to carry out again can be given. That is, when a candidate alphabetic character or a candidate character string is not obtained, on condition that the above-mentioned re-degree retrieval SW18 is ON, the CC section 13 and the dictionary retrieval section 15 change about an input-statement character or an input string, and function as a modification means 60 into which it is made to change again. In addition, retrieval SW18 consists of registers instead of a mechanical switch again.

[0057] The flow chart corresponding to the program with which the control section 40 of the dictionary retrieval section 15 in the alphabetic character input device concerning the gestalt of the 7th operation equips drawing 33 is shown. With the gestalt of this operation, in retrieval processing of the word dictionary 14, a control section 40 resets retrieval SW18 again while clearing the alphabetic character input buffer 41 (S48), and it waits for the code (code of a numerical keypad) of an input-statement character or an input string to come (S22). The processing after this is the same as that of the gestalt of the 1st operation, and in step S29, when a purport without the corresponding candidate is displayed on the LCD display 16, it is different in that step S45 to the step S47 is processed.

[0058] That is, in step S29, when a purport without the corresponding candidate is displayed on the LCD display 16 next, turning on and off of retrieval SW18 is detected again (S45). At the time of the beginning, by reset in step S48, since it is off, it branches to NO, and the last one character (figure) is deleted (S46), retrieval SW18 is again set to ON (S47), and about the alphabetic character (figure) or alphabetic character (figure) train acquired as a result of deletion, in order to search the word dictionary 14, the processing from step S24 is repeated. Thus, by deleting one character at the tail end of a character string, being in agreement with the candidate alphabetic character which attached words, such as a particle, are deleted and is registered into the word dictionary 14 is expected. That is, automatic error-correction of an input string is performed by the gestalt of this operation.

[0059] In addition, when a purport without the candidate who corresponds in step S29 is displayed on the LCD display 16 in spite of modification of such a character string, since retrieval SW18 serves as ON again, in step S45, it branches to YES, and already progresses to exception processing. It is possible to carry out in this exception processing, as explained in drawing 30 and drawing 31, and to correct. Moreover, about whether the gestalt of this operation is functioned, when the input of special numbers (being the key input which is not usually used for example, "###?(?= figure) ? (=? figure) etc." etc.) is made from a keyboard 11, a setup is canceled and automatic error-correction does not carry out. Then, if automatic error-correction is needed, the same special number as the above can be inputted and an automatic correction function can be set to ON.

[0060] The block diagram of the alphabetic character input unit concerning the gestalt of the 8th operation is shown in drawing 34. With the gestalt of this operation, the error amendment table 70, memory (PMEM) 71, and memory (KMEM) 72 are connected to the CC section 13. The error amendment table 70 of the gestalt of this operation is a candidate table of the key which serves as an operation mistake in the case of a key stroke, and as shown in drawing 35, it is constituted. That is, corresponding to class [of numerical keypad] "1" - "0", the key (namely, key which approaches in arrangement) which may carry out an operation mistake is arranged in the high order of a probability. A figure candidate's ranking currently used for replacement is memorized by memory 71, and it is set to memory 72 what position of an input-statement character or an input string is replaced. When a candidate alphabetic character or a candidate character string is not obtained, the CC section 13 and the dictionary retrieval section 15 use the above-mentioned error amendment table 70, change about an input-statement character or an input string, and function as modification means 60-A into which it is made to change again.

[0061] The flow chart corresponding to the program with which the control section 40 of the dictionary retrieval section 15 in the alphabetic character input device concerning the gestalt of the 8th operation equips drawing 36 and drawing 37 is shown. With the gestalt of this operation, in retrieval processing of

the word dictionary 14, a control section 40 clears memory (PMEM) 71 and memory (KMEM) 72 while clearing the alphabetic character input buffer 41 (S50), and it waits for the code (code of a numerical keypad) of an input-statement character or an input string to come (S22). The processing after this is the same as that of the gestalt of the 1st operation, and in step S29, when a purport without the corresponding candidate is displayed on the LCD display 16, it is different at the point which progresses to pre exception processing shown in drawing 37.

[0062] In pre exception processing shown in drawing 37, "1" increment of the value of memory 71 is carried out (S51), and it detects whether a candidate is shown in the error table 70 (S52). That is, it has detected whether there is any 1st candidate who should permute. Since there is a candidate at the beginning so that clearly from drawing 35, it branches to YES, "1" increment of the contents of memory 72 is carried out (S54), and what the 1st of an input-statement character or an input string should be permuted for in this case is directed. And it detects whether the alphabetic character of the location directed by memory 72 exists in the alphabetic character input buffer 41 (S55). When the alphabetic character of one or more characters exists, the error amendment table 70 is searched, the alphabetic character of the location which the memory 72 in the character string input buffer 41 shows in the alphabetic character which searched the alphabetic character of correspondence (S56) and was obtained from the candidate ranking which the alphabetic character which memory 72 shows, and memory 71 show here is permuted, and the processing from step S24 of the flow chart of drawing 36 is continued. That is, the word dictionary 14 is searched about the character string obtained as a result of the permutation, and a candidate alphabetic character is obtained. If the above-mentioned result and a retrieval result are not obtained, pre exception processing is performed again and a permutation is performed about the next candidate. If the candidate of a certain character position dies, in step S52, it will branch to NO, memory 71 will be reset (S53), and "1" increment of the contents of memory 72 will be carried out (S54). Thereby, about the 2nd alphabetic character of an input string, a permutation is performed and it goes. It is possible to **, for permutation correction to be automatically carried out, when the key which approaches by the error of a key stroke is operated according to the gestalt of this operation, and to input a request. Thus, without obtaining a retrieval result, even if automatic replacement correction is performed, after the permutation of the alphabetic character of the last in a character string is completed, in step S55, it branches to NO, and exception processing is performed.

[0063] It is possible to carry out in the above-mentioned exception processing, as explained in drawing 30 and drawing 31, and to correct. Moreover, about whether the gestalt of this operation is functioned, when the input of special numbers (being the key input which is not usually used for example, "###? (figure) ? (figure) etc." etc.) is made from a keyboard 11, a setup is canceled and permutation correction is not performed. Then, if permutation correction is needed, the same special number as the above can be inputted and an automatic replacement correction function can be set to ON. In addition, with the gestalt of this operation, although the permutation was performed from the head side of an input string, even if it performs a permutation from a tail, the same effectiveness is expectable.

[0064] The block diagram of the alphabetic character input unit concerning the gestalt of the 9th operation is shown in drawing 38. With the gestalt of this operation, the character range information table 75 is connected to the CC section 13, and as shown in this character range information table 75 at drawing 39, the range (can the kanji be treated even in a kana?) of the character which can be treated corresponding to the identification information (for example, telephone number) of a transmitting partner terminal is memorized beforehand. The CC section 13 constitutes the range information acquisition means 76 which acquires range information from the character range information table 75, and is passed to the dictionary retrieval section 15 which is a transliteration means.

[0065] By performing the program of the flow chart of drawing 40, the CC section 13 which is the range information acquisition means 76 acquires range information. That is, it detects whether there is any phase hand assignment (S61). With the gestalt of this operation, before becoming the mode of an alphabetic character input unit, by the special number, it directs to input by phase hand assignment, and the identification information (telephone number) of a partner terminal is inputted. The CC section 13 incorporates this (S62), and acquires the range information which shows the range of the character which can treat the destination terminal which searches the character range information table 75 and corresponds (S63). This acquired range information is memorized to the register with the above-mentioned identification information (telephone number) (S64). It progresses to the retrieval routine to the word dictionary 14 after this.

[0066] The flow chart corresponding to the program with which the control section 40 of the dictionary retrieval section 15 in the alphabetic character input device concerning the gestalt of the 9th operation

equips drawing 41 is shown. Processing until it detects a candidate alphabetic character or a candidate character string in step S26 with the gestalt of this operation is equal to the gestalt of the 1st operation. However, if a candidate is detected, when it detects whether the kanji can be treated in a partner terminal with reference to the above-mentioned register (S60) and the kanji cannot be treated, the candidate of a kana code is chosen (S61). In this case, you may choose for an additional remark display of a kanji character code. thereby, when a partner terminal cannot treat the kanji, the candidate in a kana is chosen and displayed with the kanji of an additional remark notation if it is in the gestalt of the operation which carries out an additional remark notation.

[0067] The identification information of the partner terminal memorized by the character string code and the above-mentioned register from the character input/output section 7 to the message control section 6 as it was shown in drawing 2, when it had and an input-statement character was decided which is the above is given, and transmission of call origination and data is performed through the transceiver section 3 and an antenna 5. Thus, the transliteration according to the capacity of a partner terminal is made, a suitable code is sent and processing does not become impossible at a partner terminal. In addition, when identification information without registration is inputted into the character range information table 75, it processes as what cannot treat the kanji. That is, it prevents that processing becomes impossible in a partner terminal by performing processing of a low function.

[0068] In addition, although considered as the range by the ability of the kanji to be treated with the gestalt of the 9th operation, others may have the partition of range, such as range to a Roman alphabet notation or the external character by the same kind, to a figure. It corresponds in these cases and the range information on a table is subdivided. thus, when carrying out (a ** -- it comes out so also with the gestalt of the 9th operation), the dictionary configuration doubled with processing of a low function is required. That is, a kana character code is prepared to the word same in addition to the candidate of the kanji. Moreover, the candidate of a figure and the candidate of a Roman alphabet notation are prepared, and dictionary-ization is performed.

[0069] Furthermore, with the gestalt of the 9th operation, although range information was prepared beforehand, the contents of this character range information table 75 can be updated. That is, by a special number etc., the contents of the character range information table 75 direct updating, and input the pair of phase hand identification information and range information. Thereby, the CC section 13 updates the contents of the character range information table 75. At the time of the same phase hand identification information, information is overwritten, and when it is new phase hand identification information, new registration is made.

Furthermore, you may make it send out the range information which formed the pre-procedure at the time of the communication link with a partner terminal, and you may make it acquire range information with a DTMF signal, and the switched network acquired from the partner terminal using a control channel. Also by these cases, it is effective in the ability to transmit character strings, such as a message according to the capacity of a partner terminal.

[0070] Next, the gestalt of operation of the 10th of this invention is explained. It has the left translation key 65 for moving the cursor K which indicates the location of the alphabetic character inputted in a display 102, or a character string to be the mode key 64 for the portable wireless telephone with which the alphabetic character input unit concerning the gestalt of this operation was applied to choose two or more processing modes as the ten key 103 bottom as shown in drawing 42, and the right translation key 66. The input of a predetermined special number may be made to substitute these keys for either of the ten keys 103. The mode key 64 is for calling the mode to hold one after another for every actuation, for example, this equipment has talk mode, data communication mode, alphabetic character input mode, telephone number register mode, fixed form sentence input mode, search mode, etc. When starting, it is talk mode, it becomes talk mode by one actuation of the mode key 64, and becomes data communication mode by one more actuation of the mode key 64, and the mode is changed for every actuation below, and if the mode key 64 is further operated when it is the last mode, it consists of initial states so that it may return to talk mode. If it continues operating the left translation key 65 or the right translation key 66 when the display of a multi-line is made by the display 102, as shown in drawing 42, it can be made to continue and move to this line. That is, if it continues operating the right translation key 66 when Cursor K is located in the 1st line rightmost location for example, it will move to the 2nd line rightmost location from the 1st line leftmost location, and will move in the 2nd line leftmost location direction further. As explained using drawing 30 and drawing 31, a display and control section 17 performs the display control of this cursor K by CC section 13A shown in drawing 43 incorporating keypad information through the input-control section 12, and giving this to a display and control section 17.

[0071] In the gestalt of this operation, the attribute of the alphabetic character concerning an input or a character string is specified, a suitable candidate alphabetic character or a candidate character string can be searched from the word dictionary 14, and desired words (kanji etc.) are obtained quickly. The configuration of the alphabetic character input unit concerning the gestalt of this operation is shown in drawing 43. That is, a dictionary means 310 by which an input-statement character, the candidate alphabetic character of an input string and a conversion result or a candidate character string, and its attribute information were matched, and this alphabetic character input unit was memorized, Two or more keys to which two or more kana alphabetic characters were assigned, and the conversion / next candidate key for directing a transliteration, The input means 300 for inputting an alphabetic character or a character string, and required information including the definite key for making a conversion result decide, The output means 330 for displaying the candidate alphabetic character or candidate character string of a conversion result at least, and outputting it, An attribute specification means 350 to specify the attribute of an input-statement character or an input string based on the information inputted from the above-mentioned input means 300, About the alphabetic character corresponding to the key inputted from the above-mentioned input means 300, or the inputted character string of two or more key correspondences, search the above-mentioned dictionary means 310 and it faces in quest of a candidate alphabetic character or a candidate character string. It asks for the candidate alphabetic character or candidate character string applicable to the attribute information specified by the above-mentioned attribute specification means 350, and transliteration means 320A which sends out this candidate alphabetic character or a candidate character string to the above-mentioned output means 330 is provided. The above-mentioned attribute specification means 350 is constituted by CC section 13A and the input word attribute storage section 19. The input word attribute storage section 19 is used in order to memorize the alphabetic character by which the current input is carried out, or the attribute information on a character string.

[0072] Some contents of the word dictionary 14 which constitutes the dictionary means 310 are shown in drawing 44. That is, corresponding to the code of the figure by actuation of a ten key 103, an alphabetic character with the alphabetic character in a kana or a character string, the kanji, etc. or the candidate of a character string, an alphabetic character with the above-mentioned kanji etc., or the attribute information about the candidate of a character string is further memorized like the name of a place, the name of a person, and the corporate name. In this example, attribute information may be memorized two or more, although referred to as one to the candidate of an alphabetic character with the above-mentioned kanji etc., or a character string. For example, an attribute "the name of a place" is also an attribute "a location", and can apply an "action" as an attribute "general", for example, an attribute of "please give." The configuration on actual of this word dictionary 14 is as having explained using drawing 13 from drawing 11.

[0073] Moreover, since the equipment of the gestalt of this operation specifies an attribute, CC section 13A is equipped with memory as shown in drawing 45 and drawing 46. The contents memory 77 of directions the contents of directions for acquiring two or more modes and attributes concerning processing of this equipment were matched and remembered to be is shown in drawing 45. Here, if it corresponds to talk mode and data communication mode, "0" is set. It is shown that processing about an attribute is not performed, if it corresponds to alphabetic character input mode, "directions by key input" and registration are made, and it sets to alphabetic character input mode. If following this is shown and it corresponds to telephone number register mode, the input mode of the fixed form sentence 1, and the mode of retrieval 3 when attribute information is directly inputted by key input The jump place address "aaa" of the cursor location memory 78 etc. is set, and attribute information (the "name of a place", "corporate name", etc.) is set as they are in retrieval 1 and retrieval 2. P in drawing 45 is a pointer, it is shown whether which the mode is performed and it is shown in the example of this drawing 45 that telephone number register mode is performed.

[0074] Drawing 46 shows the cursor location memory 78 the alphabetic character which starts an input corresponding to the location of Cursor K, or the attribute information on a character string was matched and remembered to be. For example, in telephone number register mode, the jump place address aaa is obtained from the contents memory 77 of directions. or [that the location of Cursor K belongs to any of a "cursor coordinate" by flying to the address aaa of the cursor location memory 78] (x1 - x2 --) x3 - x4, x5 -x6, and x7 -x8 The coordinate of the field of the "identifier" of an input item, "affiliation", the "address", and the "telephone number" is expressed, respectively. It responds and it is specified any of a "name of a person", a "corporate name", the "name of a place", and a "figure" attributes are. That is, in telephone number register mode, a display as shown in drawing 42 is performed

to a display 102, and since the items to input are an "identifier", "affiliation", the "address", and the "telephone number", the attribute "a name of a person" corresponding to these items, a "corporate name", the "name of a place", and a "figure" are memorized.

[0075] Since a display which inputs doing the action of a request in a desired location at the time of a request (at the time) into a display 102 in the input mode of the fixed form sentence 1 as shown in drawing 47 accomplishes to the above, with coordinates x13-x14, it is an attribute at "the time (at the time)", an attribute is the "name of a place" with coordinates x15-x16, and an attribute serves as an "action" with coordinates x21-x22. Input mode of this fixed form sentence 1. "He is "Patent Office (location) to" on tomorrow daytime (at the time)." "shall let's meet? (Action) It is possible to input " etc. Furthermore, the mode of retrieval 1 can be used so that the display which is for searching the data of the man of living in a specific location, and asks a display 102 for the input of the name of a place as shown in drawing 48 may be made, for example, "Tokyo" may be inputted from the contents registered for example, in the above-mentioned telephone number register mode and the man of living in Tokyo may be searched. For this reason, in the mode of retrieval 1, an attribute is the "name of a place", and this attribute "the name of a place" is directly matched with the contents memory 77 of directions by retrieval 1, and it is memorized. Furthermore, the mode of retrieval 2 is for searching the data of those who belong to a specific organization from the contents registered for example, in the above-mentioned telephone number register mode, and it can be used so that those who the display which asks a display 102 for the input of a corporate name as shown in drawing 49 is made, for example, input a "marketing department" etc., and belong to a marketing department may be searched. For this reason, in the mode of retrieval 2, an attribute is a "corporate name", and this attribute "a corporate name" is directly matched with the contents memory 77 of directions by retrieval 2, and it is memorized.

[0076] By the program of the flow chart shown in drawing 50, since CC section 13A operates as an attribute information specification means 350, it explains this. It is started by starting of this equipment, and mode detection is performed (S71). That is, it is made to move so that the mode in which the pointer P of drawing 45 corresponds according to actuation of the mode key 64 may be pointed out, and the mode which this pointer P points out is detected. Here, with reference to the mode "telephone number registration" concerned of the contents memory 77 of directions shown in drawing 45, it detects whether the contents of attribute directions are set (S72). While acquiring the coordinate of Cursor K from a display and control section 17 since the jump place address aaa to the coordinate location memory 78 is set up if it corresponds to "telephone number registration", the range of the cursor coordinate memorized to this coordinate value and the jump place address aaa to the coordinate location memory 78 is compared, and whether Cursor's K being in the range of which cursor coordinate and the attribute information which detects and corresponds are acquired (S73). For example, as shown in drawing 42, when Cursor K is in the field of an input item "affiliation", the coordinate of Cursor K is coordinate x3 -x4 of the cursor location memory 78. It is in the range and an attribute "a corporate name" can be acquired. In addition, when like [the mode of retrieval 1 etc.], attribute information can be directly acquired from the contents memory 77 of directions. Next, CC section 13A sets this attribute information to the input word attribute storage section 19, returns to step (S74) 71, and continues processing. In addition, in step S72, when it is detected that the contents of attribute directions are not set, it sets "he has no attribute" to the input word attribute storage section 19, it returns to step (S75) 71, and processing is continued (when it is detected that "0" is set). Thus, CC section 13A has always changed attribute information.

[0077] The detail of dictionary retrieval section 15A adopted in the gestalt of this operation is shown in drawing 51. This dictionary retrieval section 15A is a point equipped with the retrieval condition attaching part 45 for receiving and memorizing that CC section 13A reads and sends out the attribute information on the input word attribute storage section 19, and is different from the dictionary retrieval section 15 of drawing 9. Control-section 40A sets attribute information to the above-mentioned retrieval condition attaching part 45, and when attribute information is acquired from the word dictionary 14 with word data, it determines a candidate as compared with the attribute information on the retrieval condition attaching part 45.

[0078] Since the above-mentioned control-section 40A operates by the program of the flow chart shown in drawing 52, this is explained. Control-section 40A clears the alphabetic character input buffer 41 (S21), and CC section 13A sets it to the retrieval condition attaching part 45 in response to the attribute information which reads from the input word attribute storage section 19, and is sent out (S62). Consequently, the attribute information on the input word attribute storage section 19 or "he has no attribute information" are set to the retrieval condition attaching part 45. The actuation as the case

of the gestalt of the 1st operation with S26 [same] which compares with the code of the word dictionary 14 the figure or digit string which starts an input from the following step S22 is continued. Here If the candidate alphabetic character corresponding to the inputted figure or digit string is not memorized in the word dictionary 14 If a NEXT signal is given to the code pointer 42, stepping of the value is carried out (S27), it detects whether there is no candidate whom the code pointer 42 points out in step S28, and the entry of the last was completed and there is another entry, it will return to step S26 and processing will be continued. And if it is detected at step S28 that it is the last, the contents of the retrieval condition attaching part 45 will be investigated, and it will detect whether attribute information is set (S63). Here, if attribute information is set, it will reset, will change into "he has no attribute information" (S64), it will return to step S25 further, and actuation will be continued.

[0079] On the other hand, if a candidate is detected in step S26, the contents of the retrieval condition attaching part 45 will be investigated, and it will detect whether attribute information is set (S65). Here, if attribute information is set, it detects whether this attribute information and a candidate's acquired attribute information are in agreement (S66), and if not in agreement, it will progress to step S27 and other candidates will be searched. As stated above, by drawing 13, attribute information is added after each candidate (Str1-n), and is memorized. If attribute information is in agreement in step S66 while performing such processing, this candidate's code will be outputted to the retrieval result alphabetic character output buffer 43 (S30), and the same processing as the gestalt of the 1st operation will be performed henceforth. Moreover, the same processing as the gestalt of the 1st operation is continued, without detecting the coincidence inequality of attribute information as attribute information is reset, i.e., "with no attribute information", in step S65.

[0080] Since the candidate of the attribute concerned is extracted and outputted when it **, the attribute of the alphabetic character which starts an input according to the gestalt of this operation, or a character string is specified and a candidate alphabetic character or a candidate character string is searched from the word dictionary 14, a desired word etc. can be obtained quickly (kanji etc.). That is, since only the candidates (for example, "name of a place") of a desired attribute are chosen and outputted when there are two or more candidates corresponding to the inputted figure or digit string, out of the candidate scolded to some extent, an operator can get the alphabetic characters (kanji etc.) concerning a desired conversion result, and is efficient.

[0081] In addition, in the above-mentioned example of a configuration, the operating frequency information for every word can be given to the word dictionary 14, time amount until the candidate who uses it well is outputted more early and obtains a conversion result in the example of a configuration constituted so that it may output from a candidate with high operating frequency can be shortened more, and it is convenient.

[0082] Next, the alphabetic character input unit concerning the gestalt of operation of this invention for the English areas is explained. The front view of the portable wireless telephone with which the alphabetic character input unit concerning the gestalt of this operation was applied to drawing 53 is shown. If a hand set 101 consists of a case of the shape of a little flat rectangular parallelepiped and it applies to the lower part from the center of a front face, ten key (dialing key) 103E which consists of a key of four-line three trains is prepared, and the display 102 for displaying information, such as an alphabetic character and a notation, is formed in the upper part. Moreover, receiver section 104A for hearing the voice sent is prepared above a display 102, and transmission section 105A for inputting voice is prepared in the lower part location of ten key 103E.

[0083] The internal configuration of the above-mentioned portable wireless telephone is equal to the thing of the gestalt of the 1st operation shown in drawing 2. The block diagram when the portable wireless telephone of drawing 53 becomes a mode of operation as an alphabetic character input unit is shown in drawing 54. This configuration is equivalent to the part which consists of the input section 2 and the character input/output section 7 in the internal configuration of the portable wireless telephone of drawing 2. It is characterized by equipping an alphabetic character input unit with the following. The keyboard 11 for inputting an alphabetic character etc. The input-control section 12 which incorporates the information on the key stroke in a keyboard 11, and is sent out to the CC section 13 The CC section 13 which carries out generalization control of each part of an alphabetic character input unit Word dictionary 14E which is dictionary means 310E the input-statement character, the candidate alphabetic character of an input string and a conversion result, or the candidate character string was matched and remembered to be, The dictionary retrieval section 15 which obtains the candidate alphabetic character or candidate character string which corresponds with reference to word dictionary 14E about the input-statement character or input string given from the CC section 13, The display 16

which consists of LCD as which information, such as an alphabetic character, is displayed, and the display and control section 17 which performs control for making a display 16 display a candidate alphabetic character or a candidate character string on the bottom of control of the CC section 13 Two or more alphabet is assigned to several character each key of ten key 103E of a keyboard 11 every. That is, three characters, "A", "B", and "C", are assigned to the "2" keys of the numerical keypad of arrangement of the usual dialing key, three characters, "D", "E", and "F", are assigned to the "3" keys, the alphabet is assigned three characters at a time by the "9" keys like the following, and "Q" and "Z" are assigned to the "0" keys. Moreover, the "*" key is used as the conversion (conversion/next candidate) key, and let the "#" key be the decision (decision) key. Two or more keys to which, as for the keyboard 11, two or more alphabet was assigned in the above; It is the input means 300 for inputting an alphabetic character or a character string including the conversion / next candidate key for directing a transliteration, and the definite key for making a conversion result decide. A display 16 It is the output means 330 for displaying the candidate alphabetic character or candidate character string of a conversion result at least, and outputting it. The CC section 13 and the dictionary retrieval section 15 About the alphabetic character corresponding to the key inputted from the input means 300, or the inputted character string of two or more key correspondences The above-mentioned dictionary means 310E is searched, it asks for a candidate alphabetic character or a candidate character string, and a transliteration means 320 to send out this candidate alphabetic character or a candidate character string to the above-mentioned output means 330 is constituted.

[0084] The configuration of the above-mentioned keyboard 11 is equal to the configuration of the gestalt of the 1st operation shown in drawing 4. The configuration of the input-control section 12 is equal to the configuration of the gestalt of the 1st operation shown in drawing 5. It is equal to the 1st configuration of the gestalt of operation, and the key reading actuation which the control section 20 for which the contents of the memory table 22 contained in the above-mentioned input-control section 12 are shown in drawing 6, and which is contained in the above-mentioned input-control section 12 performs further is equal to actuation of the gestalt of the 1st operation shown in drawing 7. Moreover, it is equal to the 1st configuration of the gestalt of operation, and the detail configuration of the dictionary retrieval section 15 of the alphabetic character input unit in the gestalt of this operation with which the detail configuration of the display and control section 17 of the alphabetic character input unit in the gestalt of this operation is shown in drawing 8 is still more nearly equal to the configuration of the gestalt of the 1st operation shown in drawing 9.

[0085] The contents memorized by word dictionary 14E are shown in drawing 55. That is, the alphabetic character or character string (word) of the figure by actuation of ten key 103E according to the alphabet corresponding to a code And the dictionary information which consists of attribute information, such as a part of speech, a location, and time amount, and dictionary information on other is matched and memorized. For example, by ten key 103E, if "86596" is inputted, it has dictionary composition from which "Tokyo", its attribute information, etc. are acquired. More specifically, the configuration of word dictionary 14E is constituted as shown in drawing 58 from drawing 56. First, word dictionary 14E consists of blocks classified in the number of alphabetic characters as it is shown in drawing 56. Each block corresponding to the number of alphabetic characters consists of two or more branches corresponding to the digit string of the number of alphabetic characters concerned as it is shown in drawing 57. Here, two or more branches corresponding to the digit string of five characters exist in the block whose number of alphabetic characters is five characters, the branch corresponding to the digit string in it "25625" is specified, and the figure is displayed by "*" at the branch corresponding to other digit strings. Furthermore, the internal detail of the branch corresponding to a digit string "25625" is shown in drawing 58. in the branch, the table corresponding to SOS (00) which shows the head of the candidate corresponding to the table (therefore -- the case where a consecutiveness figure is with (1) and (8) -- two tables) corresponding to (9), and a digit string in case there is no consecutiveness figure is contained from the consecutiveness figure in the case of existing (0). The consecutiveness figure of correspondence, the pointer NTP of degree table, and the pointer NBP of degree branch are set to the table corresponding to (9) from the consecutiveness figure (0). On the other hand on the table (SOS (00) was set to the head) corresponding to a digit string in case there is no consecutiveness figure The code SOS which shows the head of a candidate (that is, it corresponds to a digit string "25625") in case there is no consecutiveness figure (00) The code EOB (FF) which shows termination of the code EOS (FF) which shows termination of an alphabetic character or candidate code [of a character string] Str1 - Strn (being constituted by n characters is shown), and candidate alphabetic character or a candidate character string code, and a branch is set. Attribute information is added and memorized with the sign of

a candidate code (Str1 – Strn constitute) which shows identification information later, respectively.

[0086] As mentioned above, two or more candidate alphabetic characters or candidate character strings exist in 1 branch, because two or more alpha characters were assigned to one key. For example, when the "2" keys and the "3" keys are operated continuously, "be" etc. which is meaningful as a word among nine kinds of candidate character strings by the combination of either ["D", "E", and "F"] "A", "B" or and "C" exists as a candidate character string. In the case of the digit string "25625" of the instantiation to drawing 57, the word "clock" which is meaningful corresponding to this digit string, "block", etc. exist.

[0087] Since the control section 40 of the dictionary retrieval section 15 performs retrieval processing of word dictionary 14E like the gestalt of the 1st operation by the program of the flow chart shown in drawing 14, it explains actuation of a control section 40 according to this flow chart. A control section 40 clears the alphabetic character input buffer 41 (S21), and it waits for the code (code of a numerical keypad) of an input-statement character or an input string to come (S22). In this example, an operator makes "clock" an input-statement character, as shown in ST1 of drawing 59. Then, an operator will operate the correspondence key of ten key 103E of a portable wireless telephone. Unlike ten key 103E of drawing 1, the alpha character is written in ten key 103E of this drawing 59 by the keytop itself which has round four corners. Even if this character input unit is the ten key 103 of the gestalt of operation of drawing 1, and it is ten key 103E of this drawing 59, it shows that a suitable input is possible. The numerical keypad of ten key 103E is operated with "25625", as shown in ST2 of drawing 59. An operator shows that it inputted by asking for the alpha character enclosed with the frame among the alpha characters corresponding to "25625" of ST2.

[0088] Then, the code corresponding to the numerical keypad concerning actuation is obtained by actuation of the input-control section 12 explained in drawing 7, and the code train corresponding to the above "25625" is stored in the alphabetic character input buffer 41. Next, an operator operates the "*" key which are conversion / next candidate key in quest of conversion, as shown in ST3 of drawing 59. By actuation of the input-control section 12 explained in drawing 7 also about the this "*" key, it is changed into a code and sent out to the CC section 13. The CC section 13 which received this sends out a retrieval start signal to the control section 40 of drawing 9. Then, as shown in drawing 14, the control section (S23) 40 which was supervising whether it was a retrieval start resets the code pointer 42 (S24), and makes a data selector signal a set condition (S25). Next, a control section 40 takes out the code stored in the alphabetic character input buffer 41 from a head, and begins retrieval from the block with one alphabetic character of word dictionary 14E. Since the technique of retrieval is the same also about the figure of what position, here explains from the retrieval in the block with three alphabetic characters.

[0089] The processing from the retrieval in the block with three alphabetic characters is shown in drawing 60. when a digit string "25625" is inputted, a figure "2" to retrieval of the single figure should do -- retrieval should do about the digit string "25" to the double figures further -- according to a digit string "256", the table of the address "3F0F" of the block with three alphabetic characters is reached further. The consecutiveness figure of this table is "1", and since it differs from the 4th figure "2" of the digit string "25625" stored in the alphabetic character input buffer 41, the following table is searched based on NTP. Here, since only the candidate whose figure following a digit string "256" is "1", and the candidate who is "2" exist, the consecutiveness figure can be searching the table of "2" instantly. usually, a consecutiveness figure -- the table of "1", for the table of "2", and its degree, a consecutiveness figure is [the degree of the table of "1" / a consecutiveness figure] "3" ... as -- it carries out and the table of a desired consecutiveness figure is reached.

[0090] If a consecutiveness figure is in agreement, based on NBP of this table, the 1st table of a branch with four alphabetic characters "2562" will be reached. On the table here, a consecutiveness figure is "5" and it is in agreement with the 5th figure "5" of the digit string "25625" stored in the alphabetic character input buffer 41. If a consecutiveness figure is in agreement, the table of the following branch "25625" will be reached based on NBP of this table. Here, since there is originally no consecutiveness figure stored in the alphabetic character input buffer 41, the table on which "00" is set to the area of a consecutiveness figure is searched. In the example of this drawing 60, it is premised on that there is no candidate with the figure which follows a digit string "25625" also in word dictionary 14E, i.e., there is no table, and the table of the address "98AC" with which "00" is immediately set to the area of a consecutiveness figure is reached from the table of a branch "2562."

[0091] In the example of drawing 60, "clock" (code; 63, 6c, ...) is set to the 1st candidate character string, and the code of "clock" is read corresponding to the output value "0" of the code pointer 42.

The above processing is equivalent to processing of the loop formation of steps S26, S27, and S28 from "retrieval" of step S25 in drawing 14. Also when directing and reading each candidate alphabetic character, stepping of the code pointer 42 in step 27 corresponds in the target table, while corresponding, when retrieving the table in drawing 60 sequentially. Therefore, the retrieval of a candidate alphabetic character currently performed in drawing 60 in practice is equivalent to the case where word dictionary 14E shown in drawing 55 is being searched. In addition, although "clock" was obtained in this example If the candidate alphabetic character corresponding to the inputted digit string is not memorized in word dictionary 14E When a NEXT signal is given to the code pointer 42, stepping of the value is carried out (S27), the loop formation from step S28 to step S26 is repeated and a candidate alphabetic character or a candidate character string finally cannot be detected, in step S28, it branches to YES. That is, an END signal is returned from the code pointer 42. Then, a control section 40 sends out "he has no relevance" to the CC section 13 using retrieval result information. The CC section 13 which received "he has no relevance" displays the purport which sends out the character font of "having no relevance" to a display and control section 15, and does not have the corresponding candidate on the LCD display 16 (S29).

[0092] The code of "clock" obtained as mentioned above is outputted to the retrieval result alphabetic character output buffer 43 (S30). The notice of a result output is given to the CC section 13 using retrieval result information, and the code of "clock" is incorporated by the CC section 13 from the retrieval result alphabetic character output buffer 43, is further sent to a display and control section 17, it is carried out as drawing 8 explained it, and the display in a display (LCD) 16 is presented with it. That is, "clock" is displayed on a display (LCD) 16. The control section 40 of the dictionary retrieval section 15 is supervising actuation of a definite key, or actuation of a next candidate key (S31, S32). Actuation of a definite key or actuation of a next candidate key is sent out from the input-control section 12 like the case of actuation of the above-mentioned conversion key to the CC section 13.

[0093] In the example of drawing 59, since "clock" is a desired alphabetic character, as shown in ST4, the definite key is operated. The CC section 13 obtains the code of a definite key, and makes a retrieval start signal change inactively. In response, the control section 40 of the dictionary retrieval section 15 branches from step 31 to YES, and makes the above-mentioned candidate alphabetic character decide. in addition, when "block" and "clock" are stored in word dictionary 14E in order corresponding to "25625" As shown to ST5 of drawing 59 by the parenthesis, a next candidate key is first operated to the display of "block." This gives a NEXT signal to the code pointer 42, stepping of the value is carried out (S27), the code of "clock" of the next candidate is obtained, and it progresses to S30 from step S26. Also in this case, since "clock" is a desired alphabetic character, as shown in ST4, a definite key is operated. Processing will be performed by subsequent processings like the above-mentioned.

[0094] Since two or more alpha character keys are assigned to each key and the alphabetic character input device applied to the gestalt of this operation as above is equipped with conversion / next candidate key, and a definite key, it can input appropriately the candidate character string which consists of combination of the alpha character train assigned to the candidate alphabetic character corresponding to the alpha character assigned to the operated key, or two or more keys which were operated, and can choose it. That is, it is suitable for an information terminal with few keys.

[0095] If the "*" key which are conversion / character candidate key is not operated with the gestalt of the above-mentioned operation, since any display is not made by the display 102, it does not know whether to be that the right key stroke is made, and operability is not necessarily good. Then, the program corresponding to the flow chart of drawing 14 with which the control section 40 of the dictionary retrieval section 15 is equipped is replaced with the program corresponding to the flow chart of drawing 17. By this, when it keys with "25625" corresponding to "clock" The actuation is [that "2", "25", ..., "25625" and the figure corresponding to the operated key increase, and is displayed as shown in drawing 61 for every actuation of each key and the key input is received, and] infallible. That is, it can check that the numerical keypad to which each alpha character of "clock" is assigned is operated. When the "*" key which are conversion / next candidate key is operated, the transliteration using word dictionary 14E is performed, the code of the candidate alphabetic character which corresponds from word dictionary 14E is read, and this is replaced with the display of the above-mentioned digit string "25625", and is displayed. In addition, the example of drawing 61 shows that the 1st candidate character string of the table corresponding to the digit string "25625" of word dictionary 14E was set to "clock."

[0096] As a table with which the control section 40 of the dictionary retrieval section 15 in the alphabetic character input device concerning the gestalt of the 3rd operation is equipped, furthermore, from "2" by "0" When the alphabetic character of the beginning of the alphabet assigned to the

corresponding key is memorized as the 1st candidate. The code of "2" and the code of "a" that is, the code of "3" and the code of "d" When the code of "4" and the code of "g" have the table on which ..., the code of "0", and the code of "q" were matched for the code of "5", and the code of "j" When it keys with "25625" by performing processing of the flow chart corresponding to the program of drawing 19 corresponding to "clock" As shown in drawing 62, for every actuation of each key "a", "aj", ..., "ajmaj", The alphabetic character of the head corresponding to the operated key increases, and is displayed, and it can check that the key input is received and that the actuation is infallible, i.e., the key to which each alpha character of "clock" is assigned is operated. When the "*" key which are conversion / next candidate key is operated, the transliteration using word dictionary 14E is performed like the above, the code of the candidate alphabetic character which corresponds from word dictionary 14E is read, and this is replaced with the display of a top Noriyuki character string "ajmaj", and is displayed. In addition, the example of drawing 62 shows that the 1st candidate character string of the table corresponding to the digit string "25625" of word dictionary 14E was set to "clock."

[0097] Furthermore, for every actuation of each key, when it keys with "2337" corresponding to "beer" by performing processing of the flow chart corresponding to the program of drawing 22 with which the control section 40 of the dictionary retrieval section 15 in the alphabetic character input unit concerning the gestalt of the 4th operation is equipped, as shown in drawing 63, "a", "be", "add", ..., "beer" are displayed. That is, the 1st candidate of the table of the candidate alphabetic character corresponding to the figure "2" of word dictionary 14E is "a." The 1st candidate of the table of the candidate alphabetic character corresponding to the digit string "23" of word dictionary 14E is "be." When the 1st candidate of the table of the candidate alphabetic character corresponding to the digit string "233" of word dictionary 14E is "add" and the 1st candidate of the table of the candidate alphabetic character corresponding to the digit string "2337" of word dictionary 14E is "beer" The candidate alphabetic character or candidate character string changed in above order is displayed without operating conversion / next candidate key in any way.

[0098] Furthermore, by performing processing of the flow chart corresponding to the program of drawing 25 with which the control section 40 of the dictionary retrieval section 15 in the alphabetic character input unit concerning the gestalt of the 5th operation is equipped, when taking out a candidate from word dictionary 14E, the candidate to the existing predetermined individual is taken out, and it outputs to the retrieval result alphabetic character output buffer 43 with a selection figure. Thereby, according to the key stroke of "227", "bar", "cap", and "car" are displayed on the display screen of a display 102 with the selection figures 1-3 so that drawing 64 may show caudad. A control section 40 makes this candidate alphabetic character decide the input of a selection figure, when it is inputted, waiting and. Moreover, if there is no input of a selection figure, actuation of a next candidate key will be detected and a next candidate key will be operated, stepping of the code pointer 42 will be carried out [above-mentioned] several predetermined candidate minutes (the example of above-mentioned drawing 64 three pieces), and it will progress to retrieval of other candidates. Thus, since these are indicated by coincidence and selection is presented when two or more candidates exist, it is effective in the ability to decide a candidate alphabetic character quickly.

[0099] Furthermore, when the equipment for the above-mentioned English areas adopts the 6th configuration of the gestalt of operation, a display and control section 17 displays "bar", "cap", "car", and "the next candidate (English)" on the location of the transparent electrode 52 of the display screen of a display 102 so that drawing 65 may show caudad. When actuation of a next candidate key is detected, the pointer for a display is changed, stepping of the code pointer 42 is carried out [above-mentioned] several predetermined candidate minutes (the example of above-mentioned drawing 65 three pieces), and it progresses to retrieval of other candidates. That is, by advancing these by three pieces, when [both] the pointer for searching a candidate alphabetic character from the inside of the pointer for displaying a candidate about the candidate character string of the table on which word dictionary 14E corresponds, and the table of word dictionary 14E is common, when it exists, the following three candidates are taken out and displayed. Thus, when two or more candidates exist, since [with a touch panel 50] these are indicated by coincidence and it is selectable, it is effective in the ability to decide a candidate alphabetic character quickly certainly.

[0100] The keyboard 11 is equipped with cursor movement keys 61 and 62 and the elimination key 63 while displaying Cursor C, as the equipment for the above-mentioned English areas as well as the configuration of drawing 30 is shown in drawing 66 for correcting an input-statement character etc. And a display and control section 17 is controlled by the program which shows a cursor pointer to the flow chart of drawing 31 based on the input of an alphabetic character, and the actuation information on

cursor movement keys 61 and 62. And in exception processing, an input figure or an input digit string is displayed, and correction is guaranteed here. That is, in exception processing, the digit string set to the alphabetic character input buffer 41 is sent out to a display and control section 17. If conversion / next candidate key is operated after correction, processing after step S23 of the flow chart of drawing 14 will be performed. Thereby, an incorrect input can be corrected appropriately.

[0101] Furthermore, when inputting the word which the attribute understands by making the word dictionary of an English-language edition equipped with the attribute information corresponding to the word dictionary 14 shown in drawing 44 provide, and making the same configurations of other as the mode of the 10th operation have also about the actuation explained in the mode of the 10th operation, a desired word etc. can be obtained quickly (alphabetic word etc.). That is, when there are two or more candidates of the alphabetic word corresponding to the inputted figure or digit string, the candidate of a desired attribute is chosen and outputted, and out of the candidate scolded to some extent, an operator can get the words (alphabetic word etc.) concerning a desired conversion result, and is efficient.

[0102] Next, in the alphabetic character input unit for the above-mentioned English areas, the gestalt of the operation which makes the alphabetic character of the head of a sentence a capital letter is explained. As shown in drawing 67, the tooth-space (space) key 67 and the line feed (return) key 68 are formed under the ten key 103E, and keyboard 11A consists of portable wireless telephones to which this alphabetic character input unit was applied. Moreover, the period (".") is matched with the "1" key of ten key 103E. The input code from keyboard 11A is key correspondence, and each character code of the candidate alphabetic character of word dictionary 13E or a candidate character string is constituted by the small letter code.

[0103] The configuration of the above-mentioned alphabetic character input unit is shown in drawing 68. In the gestalt of this operation, the configurations of CC section 13A differ to the configuration of drawing 54. or [that is, / outputting the character code which outputs to CC section 13A according to the distinction result by beginning-of-a-sentence distinction means 132 distinguish the alphabetic character of a beginning of a sentence based on the list of the code corresponding to the key inputted, capital letter conversion means 133 change and output the character code given to the character code of a capital letter, and the above-mentioned beginning-of-a-sentence distinction means 132 through said capital letter conversion means 133] -- or it has whether it outputs as it is and the means for switching 134 switch. moreover, CC section 13A is equipped with the management tool 131, and when it is reception and a predetermined code, a management tool 131 the code corresponding to the key inputted The code of remaining as it is, the candidate alphabetic character which sends this out to the dictionary retrieval section 15, is made to search the candidate by the consultation of a dictionary using word dictionary 14E by changed and accumulating at the times other than a predetermined code, and starts a retrieval result, or a candidate character string is obtained for this. Next, the code which has carried out [above-mentioned] are recording, and the code of the retrieval result by the dictionary retrieval section 15 are arranged in order, and it sends out to a means for switching 134 and the beginning-of-a-sentence distinction means 132. In here, the above-mentioned predetermined code is a code by actuation of the "1" key in which the space key 67, the line feed key 68, and the period were assigned.

[0104] The beginning-of-a-sentence distinction means 132 detects whether out of the list of the code given from a management tool 131, if the space code of the above-mentioned predetermined codes and a line feed code are detected, the first code (except for a predetermined code) which is ahead [the] is the code of a period. And directions are given to a means for switching 134, the code for one character is sent out to the capital letter conversion means 133, and if it is codes other than a period, the code will be made to output as it is, when the first code (except for a predetermined code) ahead of a space code and a line feed code is the code of a period. In addition, a means for switching 134 sends out the first code of one character to the capital letter conversion means 133, is making the subsequent code output as it is, and according to directions of the beginning-of-a-sentence distinction means 132, it sends out the code concerned of one character to the capital letter conversion means 133, and it is committed at the beginning so that a code may be made to output as it is after that. Moreover, a top character code shall be outputted from a management tool 131 at the time of the change-over directions by the beginning-of-a-sentence distinction means 132.

[0105] Since it is constituted by the computer, and CPU controls turning on and off of the capital letter flag of main memory and is changing the code based on this based on the program of the flow chart of drawing 69, specifically, CC section 13A explains this. If the power source of equipment is switched on, it will be started, the value n of the character-position register of main memory will be set to 1 (s201),

and a capital letter flag will be set to ON (s202). Next, detection of waiting (s203) and a key input is performed for a key input result being sent from the input-control means 12 (s204), migration of Cursor K (drawing 42 etc.) is directed to a display and control section 17 according to a key input (s205), and a capital letter flag is made off (s206). The code of the alphabetic character which starts the conversion result of the alphabetic character concerned since the capital letter flag is set the above result when it keys first is used as the code of a capital letter, and about the alphabetic character inputted into a degree, since the capital letter flag is then cleared, the character code concerning the conversion result is outputted as it is.

[0106] Therefore, when it inputs so that "This is a pen.That is a book." and a result may be obtained as shown in drawing 73, top "T" is made into a capital letter, and "h" following this becomes a small letter. Furthermore, CC section 13A performs detection of waiting (s207) and a key input for a key input result being sent from the input-control means 12 (s208), and directs migration of Cursor K (drawing 42 etc.) to a display and control section 17 according to a key input (s209), and it detects whether the character code in front of n (= 1) character is a space code or a line feed code from this cursor K (s210). Here, since "his" is inputted following "T", one-character before of Cursor K does not serve as a space code or a line feed code, it branches to no at step s210, OFF of a capital letter flag is continued (s217), and the actuation from step s207 is continued. It is "s" of "This", next while the above-mentioned processing is continued, since a tooth space is inputted, it branches to yes at step s210, and one increment of values n of a character-position register is carried out, and they are set to "2" (s211). And it is detected whether the character code 2 characters before Cursor K is a code of a period (s212). In the above-mentioned example, it is the code of "s", and since it is not a period, it progresses to step s213 and it is detected whether the character code 2 characters before Cursor K is a code of a tooth space (s213). In the above-mentioned example, the value n of a character-position register is returned to 1 by that which is not a space code, either (it is the code of "s".) (s216), and actuation from step s217 is performed. And when processing progresses like the following and the tooth space in front of "That" is detected, it progresses with steps S210, S211, and S212, and branches to yes here, the value n of a character-position register is returned to 1 (s214), a capital letter flag is set to ON (s215), and the processing after step s207 is continued. Consequently, "T" of "That" becomes a capital letter. In addition, the path which branches to yes at step s213, and returns to step s211 is processing when two or more tooth spaces are inputted after a period.

[0107] As mentioned above, since turning on and off of a capital letter flag is controlled, based on turning on and off of this capital letter flag, conversion of the output code to a display and control section 17 is performed, and the initial character of a sentence is changed and outputted to a capital letter. In conversion of the above-mentioned character code, since only 20 H (H is a hexa display) differ as the code of the capital letter of the alphabet and the code of a small letter are shown in drawing 70, if 20H are subtracted from a small letter code, the code of a capital letter can be obtained.

[0108] Although the above-mentioned explanation explained the alphabetic character input unit equipped with two or more keys to which two or more alphabet of **** was assigned although shown in drawing 67, the function which carries out automatic conversion of the small letter code at a capital letter code is applicable to alphabetic character input units, such as a typewriter which has a full keyboard. That is, in the alphabetic character input unit which has adopted full keyboard 11B by which all the one-character alphabet of one character as shown in drawing 71 is assigned to one key, the input of a small letter is made in the state of the usual shift, and if a desired letter key is operated, operating a Shift-key, this capital letter corresponding to a letter key can be inputted. That is, as shown in drawing 74, it is necessary to operate the letter key of "T" at the time of the input of "T" of "That", operating a Shift-key, respectively, and actuation is troublesome at the time of the input of "T" of "This" to obtain an output with "This is a pen.That is a book.", as shown in drawing 73. In addition, " _ " of drawing 73 - drawing 76 shows the input of a space key.

[0109] Moreover, the "caps" key is prepared, and it consists of other full keyboards so that the change of a capital letter and a small letter may be performed. When this kind of full keyboard is used, as shown in drawing 75, it is necessary to input before and after the input of "T" of "This" by operating the "caps" key before and after the input of "T" of "That", and actuation is troublesome too to obtain an output with "This is a pen.That is a book."

[0110] Then, it constitutes as an alphabetic character input unit is shown in drawing 72. That is, full keyboard 11B shown in drawing 71 is adopted, and the code of a small letter is changed into a capital letter by CC section 13B. The input-control section 12 generates a character code (character code of a capital letter when [Therefore] it inputs with the character code of a small letter, and actuation of a

Shift-key in the state of the shift which is usual) corresponding to a letter key, and sends it out to management tool 131B. Management tool 131B is accumulated without sending a code to the dictionary retrieval section 15, and is outputted synchronizing with distinction by the beginning-of-a-sentence distinction means 132. It operates by the program of the already shown flow chart of drawing 69 in fact, turning on and off of a capital letter flag is controlled, and a character code is changed based on this. Without completely operating a Shift-key, as it faces operating full keyboard 11B shown in drawing 71 and is shown to drawing 76 by this, if it is in the usual shift condition and "THIS_IS_A_PEN_THAT_IS_A_BOOK." is inputted, the initial character of a text will be automatically changed and outputted to a capital letter, and there is an advantage released from a complicated key stroke like before.

[0111]

[Effect of the Invention] As explained above, according to this invention, about the digit string corresponding to the figure corresponding to the inputted ten key, or two or more keys which were inputted Since one is decided out of the candidate alphabetic character which the dictionary means was searched and the candidate alphabetic character or the candidate character string was called for, and this candidate alphabetic character or a candidate character string was outputted, and was called for based on actuation of a definite key, or a candidate character string Also when it inputs using the ten key of the small number of keys, a required candidate alphabetic character or a candidate character string can be obtained, moreover, one can be decided from this candidate and a suitable alphabetic character or a suitable character string can be obtained.

[Procedure amendment 4]

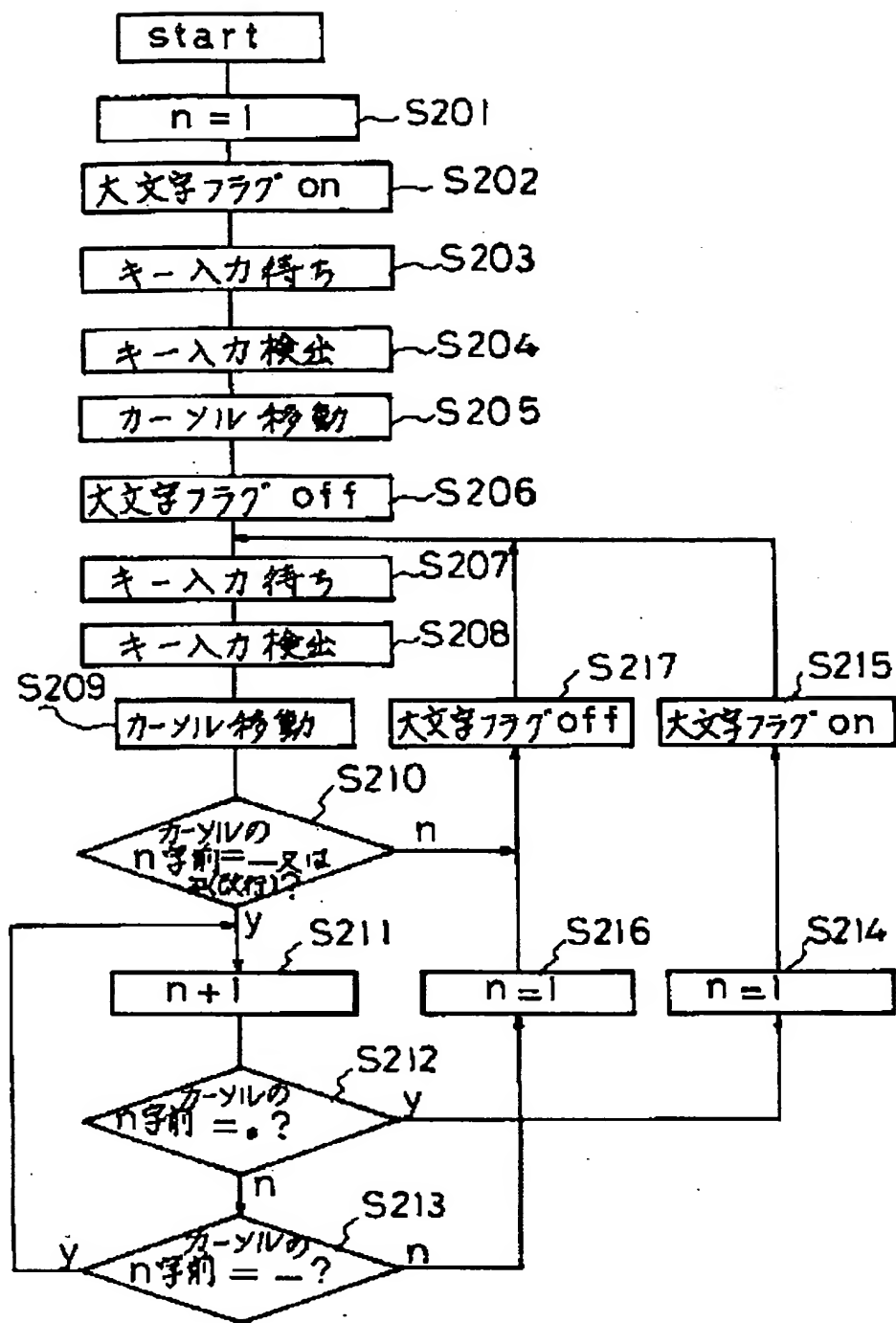
[Document to be Amended] DRAWINGS

[Item(s) to be Amended] drawing 69

[Method of Amendment] Modification

[Proposed Amendment]

[Drawing 69]



[Translation done.]

(19) 日本国特許庁 (J P)

(12) 公開特許公報 (A)

(11) 特許出願公開番号

特開平8-314920

(43) 公開日 平成8年(1996)11月29日

(51) IntCl ⁶	識別記号	庁内整理番号	F I	技術表示箇所
G 0 6 F 17/22		9288-5L	G 0 6 F 15/20	5 0 2 J
H 0 4 B 1/38			H 0 4 B 1/38	
H 0 4 Q 7/32		9288-5L	G 0 6 F 15/20	5 0 4 Z
		9288-5L		5 0 9 Z
		9288-5L		5 1 0 C
審査請求 未請求 請求項の数22 O L (全 54 頁) 最終頁に続く				

(21) 出願番号 特願平8-12494

(22) 出願日 平成8年(1996)1月29日

(31) 優先権主張番号 特願平7-52183

(32) 優先日 平7(1995)3月13日

(33) 優先権主張国 日本 (J P)

(71) 出願人 000003078

株式会社東芝

神奈川県川崎市幸区堀川町72番地

(72) 発明者 私市 一宏

東京都日野市旭が丘3丁目1番地の1 株
式会社東芝日野工場内

(72) 発明者 井上 信浩

東京都日野市旭が丘3丁目1番地の1 株
式会社東芝日野工場内

(72) 発明者 南日 俊彦

東京都日野市旭が丘3丁目1番地の1 株
式会社東芝日野工場内

(74) 代理人 弁理士 本田 崇

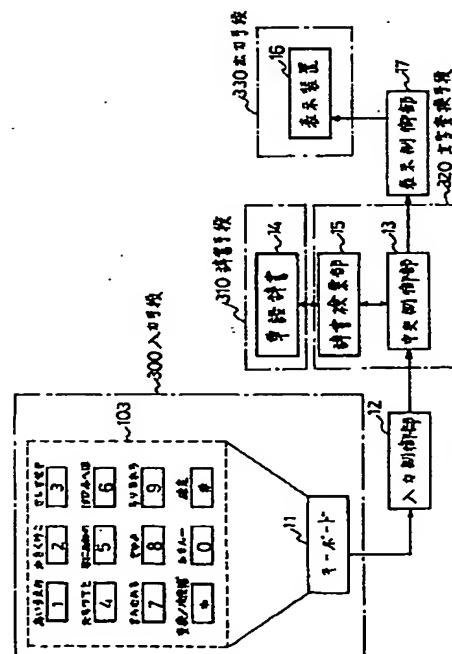
最終頁に続く

(54) 【発明の名称】 文字入力装置

(57) 【要約】

【課題】 変換表が不要で、キー操作数が多くならず、必要なメッセージ等の入力が可能である。

【解決手段】 辞書手段310と、複数の仮名文字が割り当てられた複数のテンキーと、変換/次候補キー「*」と、確定キー「#」と、変換結果の候補文字または候補文字列を表示出力する出力手段330と、入力されたキー対応文字列について、辞書手段310を検索して候補文字または候補文字列を求め、これを出力手段330へ送出する文字変換手段320とを具備し、入力された入力文字または入力文字列は意味の無い文字または文字列を含めて、操作キー数(N)の割り当て個数(M)乗(=N^M)となるが、これらについて、変換/次候補キーの操作により、辞書手段310を参照した文字変換が行われる。



【特許請求の範囲】

【請求項 1】 入力文字または入力文字列と変換結果の候補文字または候補文字列とが対応付けられて記憶された辞書手段と、

複数の文字が割り当てられた複数のキーと、文字変換を指示するための変換／次候補キーと、変換結果を確定させるための確定キーとを含み、文字または文字列を入力するための入力手段と、

変換結果の候補文字または候補文字列を少なくとも表示し出力するための出力手段と、

前記入力手段から入力された文字または入力された文字列について、前記辞書手段を検索して候補文字または候補文字列を求め、この候補文字または候補文字列を前記出力手段へ送出する文字変換手段とを具備することを特徴とする文字入力装置。

【請求項 2】 入力数字または入力数字列と変換結果の候補文字または候補文字列とが対応付けられて記憶された辞書手段と、

複数の文字が割り当てられたテンキーと、文字変換を指示するための変換／次候補キーと、変換結果を確定させるための確定キーとを含み、文字または文字列を入力するための入力手段と、

変換結果の候補文字または候補文字列を少なくとも表示し出力するための出力手段と、

前記入力手段から入力された数字または入力された数字列について、前記辞書手段を検索して候補文字または候補文字列を求め、この候補文字または候補文字列を前記出力手段へ送出する文字変換手段とを具備することを特徴とする文字入力装置。

【請求項 3】 入力手段の文字が割り当てられたキーが操作されると、このキーに対応するコードを検出し、出力手段へ送出して表示に供するコード送出手段を備えることを特徴とする請求項 1 または請求項 2 記載の文字入力装置。

【請求項 4】 文字変換手段は、入力手段の文字が割り当てられたキーが操作されると、辞書手段を検索して入力された数字に対応する候補文字または候補文字列を求め、この候補文字または候補文字列を出力手段へ送出して表示に供することを特徴とする請求項 1 または請求項 2 記載の文字入力装置。

【請求項 5】 辞書手段には、候補文字または候補文字列が所定順で記憶され、

文字変換手段は、入力手段の文字が割り当てられたキーが操作されると、辞書手段を検索して第 1 位の候補文字または候補文字列を求め、この候補文字または候補文字列を出力手段へ送出して表示に供することを特徴とする請求項 1 または請求項 2 記載の文字入力装置。

【請求項 6】 文字変換手段は、辞書手段を検索して候補文字または候補文字列を求め、複数の候補文字または候補文字列があるときには、これらの候補文字または候

補文字列を所定個ずつ出力手段へ送出して表示に供する一方、

この出力手段に表示された複数の候補文字または候補文字列について選択する候補選択手段を具備することを特徴とする請求項 1 乃至請求項 3 のいずれか 1 項に記載の文字入力装置。

【請求項 7】 出力手段の候補文字または候補文字列の表示領域にはタッチパネルが設けられ、

このタッチパネルにおける入力操作位置を検出する位置検出手段と、

この位置検出手段の検出結果と候補文字または候補文字列の表示位置との対応関係に基づき、変換結果を確定させる確定手段が備えられていることを特徴とする請求項 6 に記載の文字入力装置。

【請求項 8】 文字変換手段による処理において、候補文字または候補文字列が得られないときに、入力文字または入力文字列について変更を行い、再度前記文字変換手段による変換を行わせる変更手段が備えられていることを特徴とする請求項 1 乃至請求項 7 のいずれか 1 項に記載の文字入力装置。

【請求項 9】 変更手段は、入力文字列の末尾文字を削除して入力文字列の変更を行うことを特徴とする請求項 8 記載の文字入力装置。

【請求項 10】 変更手段は、キーの操作の際に誤操作となるキーの候補テーブルを備え、入力文字または入力文字列をこの候補テーブルに従って変更することを特徴とする請求項 8 記載の文字入力装置。

【請求項 11】 確定された文字または文字列を送信する送信手段と、

送信相手端末が処理可能な文字コードの範囲情報を得る範囲情報取得手段とを備え、

文字変換手段は前記範囲情報取得手段により得られた送信相手端末の範囲情報に基づき辞書手段の検索を行うことを特徴とする請求項 1 乃至請求項 10 のいずれか 1 項に記載の文字入力装置。

【請求項 12】 確定された文字または文字列を送信する送信手段と、

送信相手端末の識別情報と処理可能な文字コードの範囲情報とが対応付けられた範囲情報テーブルとを備え、

文字変換手段は送信相手端末の識別情報に応じて前記範囲情報テーブルから得られる範囲情報に基づき辞書手段の検索を行うことを特徴とする請求項 1 乃至請求項 10 のいずれか 1 項に記載の文字入力装置。

【請求項 13】 入力文字または入力文字列と変換結果の候補文字または候補文字列及びその属性情報とが対応付けられて記憶された辞書手段と、

複数の文字が割り当てられた複数のキーと、文字変換を指示するための変換／次候補キーと、変換結果を確定させるための確定キーとを含み、文字または文字列及び必要な情報を入力するための入力手段と、

変換結果の候補文字または候補文字列を少なくとも表示し出力するための出力手段と、

前記入力手段から入力される情報に基づき、入力文字または入力文字列の属性を特定する属性特定手段と、
前記入力手段から入力されたキー対応の文字または入力された複数のキー対応の文字列について、前記辞書手段を検索して候補文字または候補文字列を求めるに際して、前記属性特定手段により特定された属性情報に該当する候補文字または候補文字列を求め、この候補文字または候補文字列を前記出力手段へ送出する文字変換手段とを具備することを特徴とする文字入力装置。

【請求項14】 処理に係る複数のモードと属性を得るための指示内容とが対応付けられて記憶された指示内容メモリを備え、

属性特定手段は、処理中のモードを検出し、このモードに対応する指示内容を上記指示内容メモリから得て、該指示内容に基づき入力に係る文字または文字列の属性を得ることを特徴とする請求項13に記載の文字入力装置。

【請求項15】 文字または文字列の入力に際して、入力中の文字または文字列の位置を示すカーソルを出力手段に表示するカーソル表示手段と、

このカーソルの位置に対応して入力に係る文字または文字列の属性情報が対応付けられて記憶されたカーソル位置メモリとを備え、

属性特定手段は、上記カーソル表示手段によるカーソルの表示位置及び上記カーソル位置メモリの内容から、入力に係る文字または文字列の属性を得ることを特徴とする請求項13または14に記載の文字入力装置。

【請求項16】 属性特定手段は、入力手段から入力されるその後の入力に係る文字または文字列の属性の指示内容に応じて、入力に係る文字または文字列の属性を得ることを特徴とする請求項13乃至15のいずれか1項に記載の文字入力装置。

【請求項17】 1または2以上文字が割り当てられた複数のキーを有し、文字コードを入力するための入力手段と、

この入力手段から入力されるキー対応のコードの並びに基づき文頭の文字を判別する文頭判別手段と、

与えられる文字コードを大文字の文字コードに変換して出力する大文字変換手段と、

与えられる文字コードに対応する文字を少なくとも表示し出力するための出力手段と、

上記文頭判別手段による判別結果に応じて前記出力手段へ出力する文字コードを前記大文字変換手段を介して出力するか又はそのまま出力するか切り換える切換手段とを具備することを特徴とする文字入力装置。

【請求項18】 入力文字または入力文字列と変換結果の候補文字または候補文字列とが対応付けられて記憶された辞書手段と、

複数の文字が割り当てられた複数のキーと、文字変換を指示するための変換／次候補キーと、変換結果を確定させるための確定キーとを含み、文字または文字列を入力するための入力手段と、

前記入力手段から入力されたキー対応の文字または入力された複数のキー対応の文字列について、前記辞書手段を検索して候補文字または候補文字列を求め、この候補文字または候補文字列を送出する文字変換手段と、

前記入力手段から入力されるキー対応のコード及び前記文字変換手段による変換結果のコードの並びに基づき文頭の文字を判別する文頭判別手段と、

与えられる文字コードを大文字の文字コードに変換して出力する大文字変換手段と、

与えられる文字コードに対応する文字を少なくとも表示し出力するための出力手段と、

上記文頭判別手段による判別結果に応じて前記出力手段へ出力する文字コードを前記大文字変換手段を介して出力するか又はそのまま出力するか切り換える切換手段とを具備することを特徴とする文字入力装置。

【請求項19】 文頭判別手段は、当該文字の前に1または複数のスペースコードがあるか、改行コードがあり、その前にピリオドコードがある場合に、当該文字が先頭文字であると判断することを特徴とする請求項17に記載の文字入力装置。

【請求項20】 入力手段の複数のキーには、仮名文字が割り当てられていることを特徴とする請求項1乃至18のいずれか1項に記載の文字入力装置。

【請求項21】 入力手段の複数のキーには、アルファベット文字が割り当てられていることを特徴とする請求項1乃至18のいずれか1項に記載の文字入力装置。

【請求項22】 請求項1乃至21のいずれか1項に記載の文字入力装置を備えることを特徴とする携帯無線電話機。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】この発明は、文字入力装置に関し、特にキー数に制限がある装置、例えば、携帯情報端末に好適な文字入力装置に関するものである。

【0002】

【従来の技術】従来、例えば、携帯無線電話機等の携帯情報端末により、様々な文字入力装置が実現されている。まず、図77に示されるように、携帯無線電話機のハンドセット201の表面中央部から下方にかけて4行3列に配置されているテンキー（ダイヤルキー）203を用いるものが知られている。入力手法としては、次の2通りが知られている。

【0003】その第1の手法は、図78に示されるようなマトリックス文字配列表を用いるものである。つまり、数字のペアと1文字（記号）とを対応付けて記憶しておく。そして、上記表を参照して、所望の文字（記

号)の行列に対応する数字のペアを入力することにより、1文字(記号)を入力することができる。例えば、「とうきよう(東京)」との入力を得たいときには、図79に示されるように、「4513228513」とテンキーを操作する。これにより、図77に示される携帯無線電話機の表示部202には、数字のペアに対応して「とうきよう」が表示される。

【0004】その第2の手法は、数字コードと定型文とを対応付けて記憶しておき、定型文のコード表を参照してテンキー203の操作により、所望の定型文に対応するコードを入力するものである。例えば、定型文の文字コード列が図80のように、2桁のコードに対応して記憶されているとする。この場合、「会社に電話して下さい」を入力したいのであれば、テンキー203の操作により「01」を入力する。これにより、図77の携帯無線電話機の表示部202には、入力されたコードに対応して「会社に電話して下さい」が表示される。

【0005】

【発明が解決しようとする課題】しかし、上記の文字入力装置によると、基本的には変換表がなければキー入力を行うことができず、不便であるという問題点があった。これに対し、図81に示すようにテンキー203のそれぞれに、複数の仮名文字を割り当てた携帯無線電話機等も知られている。この装置においては、各キーにおける操作の回数と文字とが対応付けられて記憶されている。各キーにおいて操作の回数が1であるとき、対応する表記の左端の文字が入力され、以下操作数が1回増加すると、表記の右方向へ1ずつシフトした文字が入力される。例えば、「とうきよう(東京)」との入力を得たいときには、図82に示されるように、「444411122888111」とテンキー203を操作する。これにより、図77の携帯無線電話機の表示部202には、キーの操作回数に対応して「とうきよう」が表示されることになる。

【0006】この文字入力装置によると、上記のように変換表は不要となるが、キー操作数が極めて多くなり、場合によっては、操作回数のカウントを誤って誤入力を起こす問題点があった。また、語呂合わせにより数字を並べて入力することも、例えば、選択呼出受信機等において行われているが、語呂合わせの数字列とその内容に係るメッセージを知っていることが前提であり、一般に使い勝手が悪いという問題点があった。また、語呂合わせでは表現できないメッセージもあり、相手の的確に意思を伝えることができにくいという問題もあった。

【0007】本発明は上記のような従来の文字入力装置の問題点に鑑みてなされたもので、その目的は、変換表が不要であり、しかも、キー操作数が多くなることなく、必要なメッセージ等の入力が可能である文字入力装置を提供することである。

【0008】

【課題を解決するための手段】本発明の請求項1に記載の文字入力装置は、入力文字または入力文字列と変換結果の候補文字または候補文字列とが対応付けられて記憶された辞書手段と、複数の文字が割り当てられた複数のキーと、文字変換を指示するための変換/次候補キーと、変換結果を確定させるための確定キーとを含み、文字または文字列を入力するための入力手段と、変換結果の候補文字または候補文字列を少なくとも表示し出力するための出力手段と、前記入力手段から入力されたキー対応の文字または入力された複数のキー対応の文字列について、前記辞書手段を検索して候補文字または候補文字列を求め、この候補文字または候補文字列を前記出力手段へ送出する文字変換手段とを具備することを特徴とする。以上の通りに構成される結果、複数の文字が割り当てられたキーが操作され、変換/次候補キーが操作されると、入力されたキー対応の文字または入力された複数のキー対応の文字列について、辞書手段を検索して候補文字または候補文字列を求め、この候補文字または候補文字列が出力手段へ送出されることになる。

【0009】本発明の請求項2に記載の文字入力装置は、入力数字または入力数字列と変換結果の候補文字または候補文字列とが対応付けられて記憶された辞書手段と、複数の文字が割り当てられたテンキーと、文字変換を指示するための変換/次候補キーと、変換結果を確定させるための確定キーとを含み、文字または文字列を入力するための入力手段と、変換結果の候補文字または候補文字列を少なくとも表示し出力するための出力手段と、前記入力手段から入力されたテンキー対応の数字または入力された複数のキー対応の数字列について、前記辞書手段を検索して候補文字または候補文字列を求め、この候補文字または候補文字列を前記出力手段へ送出する文字変換手段とを具備することを特徴とする。以上の通りに構成される結果、複数の文字が割り当てられたテンキーが操作され、変換/次候補キーが操作されると、入力されたテンキー対応の文字または入力された複数のテンキー対応の文字列について、辞書手段を検索して候補文字または候補文字列を求め、この候補文字または候補文字列が出力手段へ送出されることになる。

【0010】本発明の請求項3に記載の文字入力装置は、入力手段の文字が割り当てられたキーが操作されると、このキーに対応するコードを検出し、出力手段へ送出して表示に供するコード送出手段を備えることを特徴とする。以上の通りに構成される結果、文字が割り当てられたキーが操作されると、このキーに対応するコードを検出し、出力手段へ送出して操作されたキー対応の文字表示が行われる。つまり、操作されたキー対応の数字やアルファベットが表示される。

【0011】本発明の請求項4に記載の文字入力装置では、文字変換手段が、入力手段の文字が割り当てられたキーが操作されると、辞書手段を検索して候補文字また

は候補文字列を求め、この候補文字または候補文字列を出力手段へ送出して表示に供することを特徴とする。以上の通りに構成される結果、文字が割り当てられたキーが操作されると、辞書手段を検索して候補文字または候補文字列を求め、この候補文字または候補文字列の表示がなされる。

【0012】本発明の請求項5に記載の文字入力装置では、辞書手段に候補文字または候補文字列が所定順で記憶され、文字変換手段は、入力手段の文字が割り当てられたキーが操作されると、辞書手段を検索して第1位の候補文字または候補文字列を求め、この候補文字または候補文字列を出力手段へ送出して表示に供することを特徴とする。以上の通りに構成される結果、入力手段の文字が割り当てられたキーが操作されると、辞書手段を検索して第1位の候補文字または候補文字列を求め、この候補文字または候補文字列の表示がなされる。

【0013】本発明の請求項6に記載の文字入力装置では、文字変換手段が、辞書手段を検索して候補文字または候補文字列を求め、複数の候補文字または候補文字列があるときには、これらの候補文字または候補文字列を所定個ずつ出力手段へ送出して表示に供する一方、この出力手段に表示された複数の候補文字または候補文字列について選択する候補選択手段が具備されていることを特徴とする。以上の通りに構成される結果、複数の候補文字または候補文字列があるときには、これらの候補文字または候補文字列を所定個ずつ表示され、この表示された複数の候補文字または候補文字列について選択することができる。

【0014】本発明の請求項7に記載の文字入力装置には、出力手段の候補文字または候補文字列の表示領域にはタッチパネルが設けられ、このタッチパネルにおける入力操作位置を検出する位置検出手段と、この位置検出手段の検出結果と候補文字または候補文字列の表示位置との対応関係に基づき、変換結果を確定させる確定手段が備えられていることを特徴とする。以上の通りに構成される結果、候補文字または候補文字列の表示領域のタッチパネルにおける入力操作位置が検出され、この検出結果と候補文字または候補文字列の表示位置との対応関係に基づき、変換結果が確定されることになる。

【0015】本発明の請求項8に記載の文字入力装置では、文字変換手段による処理において、候補文字または候補文字列が得られないときに、入力文字または入力文字列について変更を行い、再度前記文字変換手段による変換を行わせる変更手段が備えられていることを特徴とする。以上の通りに構成される結果、候補文字または候補文字列が得られないときには、入力文字または入力文字列について変更を行い、再度変換が行われる。

【0016】本発明の請求項9に記載の文字入力装置では、変更手段が、入力文字列の末尾文字を削除して入力文字列の変更を行うことを特徴とする。以上の通りに構

成される結果、候補文字または候補文字列が得られないときには入力文字列の末尾文字を削除して、入力文字または入力文字列について変更を行い、再度変換が行われる。

【0017】本発明の請求項10に記載の文字入力装置では、変更手段が、キーの操作の際に誤操作となるキーの候補テーブルを備えており、入力文字または入力文字列をこの候補テーブルに従って変更することを特徴とする。以上の通りに構成される結果、候補文字または候補文字列が得られないときには、キーの操作の際に誤操作となるキーの候補テーブルに従って、入力文字または入力文字列について変更を行い、再度変換が行われる。

【0018】本発明の請求項11に記載の文字入力装置は、確定された文字または文字列を送信する送信手段と、送信相手端末が処理可能な文字コードの範囲情報を得る範囲情報取得手段とを備え、文字変換手段が前記範囲情報取得手段により得られた送信相手端末の範囲情報に基づき辞書手段の検索を行うことを特徴とする。以上の通りに構成される結果、送信相手端末が処理可能な文字コードの範囲情報を得て、これに基づき辞書手段の検索が行われる。

【0019】本発明の請求項12に記載の文字入力装置は、確定された文字または文字列を送信する送信手段と、送信相手端末の識別情報と処理可能な文字コードの範囲情報とが対応付けられた範囲情報テーブルとを備え、文字変換手段が送信相手端末の識別情報に応じて前記範囲情報テーブルから得られる範囲情報に基づき辞書手段の検索を行うことを特徴とする。以上の通りに構成される結果、送信相手端末の識別情報と処理可能な文字コードの範囲情報とが対応付けられた範囲情報テーブルから、送信相手端末が処理可能な文字コードの範囲情報を得て、これに基づき辞書手段の検索が行われる。

【0020】本発明の請求項13に記載の文字入力装置は、入力文字または入力文字列と変換結果の候補文字または候補文字列及びその属性情報とが対応付けられて記憶された辞書手段と、複数の文字が割り当てられた複数のキーと、文字変換を指示するための変換／次候補キーと、変換結果を確定させるための確定キーとを含み、文字または文字列及び必要な情報を入力するための入力手段と、変換結果の候補文字または候補文字列を少なくとも表示し出力するための出力手段と、前記入力手段から入力される情報に基づき、入力文字または入力文字列の属性を特定する属性特定手段と、前記入力手段から入力されたキー対応の文字または入力された複数のキー対応の文字列について、前記辞書手段を検索して候補文字または候補文字列を求めるに際して、前記属性特定手段により特定された属性情報に該当する候補文字または候補文字列を求め、この候補文字または候補文字列を前記出力手段へ送出する文字変換手段とを具備することを特徴とする。以上の通りに構成される結果、特定された属性

と一致する属性を持つ候補文字または候補文字列のみが出力手段にて表示されることになる。

【0021】本発明の請求項14に記載の文字入力装置は、処理に係る複数のモードと属性を得るための指示内容とが対応付けられて記憶された指示内容メモリを備え、属性特定手段は、処理中のモードを検出し、このモードに対応する指示内容を上記指示内容メモリから得て、該指示内容に基づき入力に係る文字または文字列の属性を得ることを特徴とする。以上の通りに構成されるので、処理中のモードによって入力に係る文字または文字列の属性が特定され、特定された属性と一致する属性を持つ候補文字または候補文字列のみが出力手段にて表示されることになる。

【0022】本発明の請求項15に記載の文字入力装置は、文字または文字列の入力に際して、入力中の文字または文字列の位置を示すカーソルを出力手段に表示するカーソル表示手段と、このカーソルの位置に対応して入力に係る文字または文字列の属性情報が対応付けられて記憶されたカーソル位置メモリとを備え、属性特定手段は、上記カーソル表示手段によるカーソルの表示位置及び上記カーソル位置メモリの内容から、入力に係る文字または文字列の属性を得ることを特徴とする。以上の通りに構成されるので、入力に係る文字または文字列の属性がカーソルの表示位置から特定され、特定された属性と一致する属性を持つ候補文字または候補文字列のみが出力手段にて表示されることになる。

【0023】本発明の請求項16に記載の文字入力装置では、属性特定手段が、入力手段から入力されるその後の入力に係る文字または文字列の属性の指示内容に応じて、入力に係る文字または文字列の属性を得ることを特徴とする。以上の通りに構成されるので、操作者の属性指示により、その後の入力に係る文字または文字列の属性が特定され、特定された属性と一致する属性を持つ候補文字または候補文字列のみが出力手段にて表示されることになる。

【0024】本発明の請求項17に記載の文字入力装置は、1または2以上文字が割り当てられた複数のキーを有し、文字コードを入力するための入力手段と、この入力手段から入力されるキー対応のコードの並びに基づき文頭の文字を判別する文頭判別手段と、与えられる文字コードを大文字の文字コードに変換して出力する大文字変換手段と、与えられる文字コードに対応する文字を少なくとも表示し出力するための出力手段と、上記文頭判別手段による判別結果に応じて前記出力手段へ出力する文字コードを前記大文字変換手段を介して出力するか又はそのまま出力するか切り換える切換手段とを具備することを特徴とする。以上の通りに構成されるので、入力した文の文頭が自動的に検出され、この文頭の文字が自動的に大文字とされ、出力されることになる。

【0025】本発明の請求項18に記載の文字入力装置

は、入力文字または入力文字列と変換結果の候補文字または候補文字列とが対応付けられて記憶された辞書手段と、複数の文字が割り当てられた複数のキーと、文字変換を指示するための変換／次候補キーと、変換結果を確定させるための確定キーとを含み、文字または文字列を入力するための入力手段と、前記入力手段から入力されたキー対応の文字または入力された複数のキー対応の文字列について、前記辞書手段を検索して候補文字または候補文字列を求め、この候補文字または候補文字列を送出する文字変換手段と、前記入力手段から入力されるキー対応のコード及び前記文字変換手段による変換結果のコードの並びに基づき文頭の文字を判別する文頭判別手段と、与えられる文字コードを大文字の文字コードに変換して出力する大文字変換手段と、与えられる文字コードに対応する文字を少なくとも表示し出力するための出力手段と、上記文頭判別手段による判別結果に応じて前記出力手段へ出力する文字コードを前記大文字変換手段を介して出力するか又はそのまま出力するか切り換える切換手段とを具備することを特徴とする。以上の通りに構成されるので、複数の文字が割り当てられたキーが操作され、変換／次候補キーが操作されると、入力されたキー対応の文字または入力された複数のキー対応の文字列について、辞書手段を検索して候補文字または候補文字列を求められるときに、この候補文字または候補文字列による文の文頭が自動的に検出され、この文頭の文字が自動的に大文字とされ、出力されることになる。

【0026】本発明の請求項19に記載の文字入力装置で、文頭判別手段が、当該文字の前に1または複数のスペースコードがあるか、改行コードがあり、その前にピリオドコードがある場合に、当該文字が先頭文字であると判断することを特徴とする。これにより、ピリオドの入力がなされ、改行後の最初の文字、または、ピリオドの入力がなされ、1または複数のスペース入力後の最初の文字が、大文字とされ出力されることになる。

【0027】本発明の請求項20に記載の文字入力装置では、入力手段の複数のキーには、仮名文字が割り当てられていることを特徴とする。以上の通りに構成されるので、日本語入力に係る文字入力装置が構成される。

【0028】本発明の請求項21に記載の文字入力装置では、入力手段の複数のキーには、アルファベット文字が割り当てられていることを特徴とする。以上の通りに構成されるので、アルファベット入力に係る文字入力装置が構成される。

【0029】本発明の請求項22に記載の携帯無線電話機は、請求項1乃至21のいずれか1項に記載の文字入力装置を備える。これにより、携帯無線電話機において文字入力が可能となり、文章の蓄積や相手とのメッセージ通信が携帯無線電話機を用いてできることになる。

【0030】

【発明の実施の形態】以下添付図面を参照して本発明の

実施の形態に係る文字入力装置を説明する。各図の説明において同一の構成要素には、同一の符号を付して重複する説明を省略する。図1には本発明の実施の形態に係る文字入力装置が適用された携帯無線電話機の正面図が示されている。ハンドセット101は、やや扁平な直方体状の筐体からなり、その表面中央から下部にかけては、4行3列のキーからなるテンキー（ダイヤルキー）103が設けられ、その上方には文字・記号等の情報を表示するための表示部102が設けられている。また、表示部102の上方には、送られてくる音声を受取るための受話部104Aが設けられており、更に、テンキー103の下方位置には音声を入力するための送話部105Aが設けられている。

【0031】図2には、上記の携帯無線電話機の内部構成が示されている。携帯無線電話機は、各部を制御するコントローラ1と、情報を入力するための入力部2と、電波の送受信を行うアンテナ5と、このアンテナ5に接続され信号の送受信を行う送受信部3と、この送受信部3と受話器104、送話器105との間で音声信号の送受を行う通話回路4とから構成されている。受話器104、送話器105は、それぞれ、図1の受話部104Aと送話部105Aとに対応する。コントローラ1は、通話に関する制御を行うための通話制御部6と、入力部2からの入力に基づく文字入出力処理を行う文字入出力部7とから構成されている。通話制御部6は、入力部2からの入力に応じた発信制御、アンテナ5及び送受信部3を介して到来する着信信号に応じた着信制御、通話回路4に対する増幅度の調整等の制御を行う。また、通話制御部6は、文字入出力部7から送られるデータを送受信部3を介して送信させ、また、受信したデータを文字入出力部7へ送出する機能を有している。入力部2には、電話機としての動作モードと文字入力装置としての動作を切り換えるモード切換スイッチが設けられている。このモード切換スイッチは、フックスイッチでもよく、フックスイッチを使用する場合には、例えば、オンフック時に文字入力装置としての動作モードとなる。

【0032】図3には、図1の携帯無線電話機が文字入力装置としての動作モードとなった場合の構成図が示されている。この構成は、図2においては、入力部2と文字入出力部7とからなる部分である。文字入力装置は、文字等の入力を行うためのキーボード11と、キーボード11におけるキー操作の情報を取り込み中央制御部13に送出する入力制御部12と、文字入力装置の各部を統括制御する中央制御部13と、入力文字または入力文字列と変換結果の候補文字または候補文字列とが対応付けられて記憶された辞書手段310である単語辞書14と、中央制御部13から与えられる入力文字または入力文字列について単語辞書14を参照して対応する候補文字または候補文字列を得る辞書検索部15と、文字等の情報が表示されるLCD等からなる表示装置16と、中

央制御部13の制御の下に候補文字または候補文字列等を表示装置16に表示させるための制御を行う表示制御部17とを具備している。キーボード11のテンキー103の各数字キーには、仮名文字が複数個ずつ割り当てられている。つまり、通常のダイヤルキーの配置の数字キーの、「1」キーには五十音の「あ」行の5文字が割り当てられ、「2」キーには五十音の「か」行の5文字が割り当てられ、以下同様に「0」キーまでに仮名文字が割り当てられている。但し、「8」キーには「や」「ゆ」「よ」が割り当てられ、「0」キーには「わ」「を」「ん」「ー」が割り当てられている。また、「*」キーは変換/次候補キーとされ、「#」キーは確定キーとされている。上記において、キーボード11は、複数の仮名文字が割り当てられた複数のキーと、文字変換を指示するための変換/次候補キーと、変換結果を確定させるための確定キーとを含み、文字または文字列を入力するための入力手段300であり、表示装置16は、変換結果の候補文字または候補文字列を少なくとも表示し出力するための出力手段330であり、中央制御部13及び辞書検索部15は、入力手段300から入力されたキー対応の文字または入力された複数のキー対応の文字列について、上記辞書手段310を検索して候補文字または候補文字列を求め、この候補文字または候補文字列を上記出力手段330へ送出する文字変換手段320を構成している。

【0033】図4には上記キーボード11の構成が示されている。テンキー103の各キーに対応してキーマトリックス10が設けられ、キーマトリックス10の各スイッチの一方の接点にはブルアップ抵抗及びロウ（row）方向ラインOut0~Out3を介して5Vの電圧が常時与えられており、ロウ方向ラインOut0~Out3の端点は入力制御部12へ至っている。また、キーマトリックス10の各スイッチの他方の接点にはカラム（column）方向ラインM0~M2が接続され、カラム方向ラインM0~M2の端点は入力制御部12へ至っている。

【0034】一方、入力制御部12は図5に示されるように構成されている。入力制御部12は、全体の制御を行う制御部20、タイマ21、メモリーテーブル22、メモリー（MEM2）23、メモリー（MEM1）24、ラッチ25、26とにより構成される。ラッチ25は制御部20から送出されるカラム方向ラインM0~M2に対するドライブ信号をラッチする回路であり、ラッチ26はロウ方向ラインOut0~Out3の信号を取り込みラッチする回路である。タイマ21は、キー操作時に発生するチャタリングを除去すべく設けられており、2重にキー操作の読み込みを行うために、所定時間間隔（1ms）を制御部20に通知する。メモリー23にはラッチ25に出力したドライブ信号がセットされ、メモリー24にはその時にラッチ26に保持された検出信号がセットされる。メモリーテーブル22は操作されたキーを特定するためのデータが格納され

ているもので、その内容は図6に示されるようである。即ち、メモリ23にセットされるデータが、図6のMEM2のセット値「0」、「1」、「2」のそれぞれのときに、MEM2の下3欄のM2～M0を1セットとする3パターンがそれぞれ対応し、ラッチ25にセットされていることを示す。従って、ラッチ25にMEM2の下3欄のM2～M0を1セットとする横方向に並ぶ3パターンのいずれかがセットされると、これに対応して、メモリ23に図6のMEM2におけるセット値「0」、「1」、「2」の数字いずれかがセットされ、これに対してラッチ26には、図6のMEM1の右4欄の横方向に並ぶOut3～Out1を1セットとする4パターンのいずれかがセットされ、この値がメモリ24にセットされる。このため、図6のMEM1の横方向に並ぶ4パターンのいずれかとMEM2のセット値「0」、「1」、「2」のいずれかとの交点の位置の数字が操作されたキーの数字を示すことになる。例えば、メモリ23に「1」がセットされ、メモリ24に「1011」がセットされると、メモリテーブル22からは「5」キーを示すコードが出力される。このとき、ラッチ25には「(M2～M0=)101」がセ

ットされたことを示す。
 【0035】制御部20は図7に示されるフローチャートのプログラムによりキー読み込みを行うので、このフローチャートに従って、制御部20の動作を説明する。まず、カラム方向ラインM0～M2の全てに「0」を出力すべくラッチ25に信号をラッチさせ(S1)、ロウ方向ラインOut0～Out3のいずれかに「0」が現れるのをラッチ26にラッチされる信号に基づき監視する(S2)。「0」が現れると、タイマ21を参照して1ms待ち(S3)、ロウ方向ラインOut0～Out3の信号をラッチ26から取り込みメモリ24にセットする(S4)。さらに、タイマ21を参照して1ms待ち(S5)、ロウ方向ラインOut0～Out3の信号をラッチ26から取り込み、既にメモリ24にセットされている内容と等しいかを検出する(S6)。ここで、等しくないときには、再びステップS2へ戻って動作を継続し、一方、1度目と2度目との読み込み結果が等しいときには、カラム方向ラインM0のみへ「0」を出力すべくラッチ25に信号「110(=M2M1M0)」をラッチさせると共に、メモリ23には「0」をセットし(S7)、ラッチ26にラッチされるロウ方向ラインOut0～Out3の信号のいずれかに「0」があるかを検出する(S8)。つまり、カラム方向ラインM0のみへ「0」を出力したとき、図4のカラム方向ラインM0に接続されている4個のキーのいずれかが操作されていると、ロウ方向ラインOut0～Out3の信号のいずれかに「0」が出現する。ここで、ロウ方向ラインOut0～Out3の信号のいずれにも「0」がなければ、カラム方向ラインM1のみへ「0」を出力すべくラッチ25に信号「101」をラッチさせると共に、メモリ23には「1」をセットし(S9)、ラッチ26にラッチされる

ロウ方向ラインOut0～Out3の信号のいずれかに「0」があるかを検出する(S10)。つまり、カラム方向ラインM1のみへ「0」を出力したとき、図4のカラム方向ラインM1に接続されている4個のキーのいずれかが操作されていると、ロウ方向ラインOut0～Out3の信号のいずれかに「0」が出現する。更に、ここで、ロウ方向ラインOut0～Out3の信号のいずれにも「0」がなければ、カラム方向ラインM2のみへ「0」を出力すべくラッチ25に信号「011」をラッチさせると共に、メモリ23には「2」をセットし(S11)、ラッチ26にラッチされるロウ方向ラインOut0～Out3の信号のいずれかに「0」があるかを検出する(S12)。つまり、カラム方向ラインM2に接続されている4個のキーのいずれかが操作されていると、ロウ方向ラインOut0～Out3の信号のいずれかに「0」が出現する。

【0036】以上の処理の結果、いずれの場合にもロウ方向ラインOut0～Out3の信号のいずれにも「0」が出現しなければ、ステップS1に戻って動作を継続し、上記ステップS8、S10、S12のいずれかの場合にロウ方向ラインOut0～Out3の信号のいずれかに「0」が出現すると、ロウ方向ラインOut0～Out3の信号をラッチ26から取り込み、メモリ24にセットする(S13)。次に、制御部20はメモリテーブル22に出力を指示し、この結果メモリ23、24にセットされた信号に基づきメモリテーブル22の検索が行われ(S14)、メモリテーブル22から出力されたキーのコードを中央制御部13へ送出する。次に、カラム方向ラインM0～M2の全てに「0」を出力すべくラッチ25に信号をラッチさせ(S15)、ロウ方向ラインOut0～Out3の全てが「1」となったか(復旧したか)を検出し(S16)、オール「1」が得られると検出後にタイマ21を参照して1msの経過後(S17)、ロウ方向ラインOut0～Out3の全てが「1」となったか(復旧したか)を検出し(S18)、オール「1」が得られると、ステップS1に戻って動作を続ける。以上のようにして、テンキー103のいずれのキーが操作されたのかを示すコード(例えば、数字に対応するコード)が中央制御部13へ送出される。

【0037】図8には上記文字入力装置の表示制御部17の詳細構成が示されている。表示制御部17は、文字フォント(キャラクタパターン)が記憶された文字フォントメモリ31、この文字フォントメモリ31のフォントを中央制御部13の制御により画像メモリ33に展開する文字フォント展開部32、(LCD)表示装置16に表示する画像データをビットマップにより保持する画像(ビットマップ)メモリ33、表示中の表示フォントデータ(キャラクタコード)を表示位置と共に記憶するためのキャラクタ位置メモリ34から構成されている。

【0038】上記表示制御部17には、中央制御部13

から表示フォントデータ、表示位置データ、展開開始指示信号、キャラクタ位置メモリ34の位置データ（アドレス）が与えられる。つまり、展開開始指示信号と共に、表示フォントデータが送られることにより、文字フォント展開部32は文字フォントメモリ31をアクセスして与えられた表示フォントデータに対応する表示フォントを取り出し、表示位置データ（画像メモリ33の座標）に基づき画像メモリ33の対応位置に格納する。これにより、LCD表示装置16の画面の画素に1対1で画像メモリ33のデータ位置が対応付けられているため、該当の位置に展開された表示フォントの画素データが記憶される。一方、キャラクタ位置メモリ34には、表示フォントデータと表示位置データとが、中央制御部13から送られる位置データの位置に記憶されてゆく。中央制御部13はこれをリード信号を用いて読み出すことができ、表示中のデータ（表示フォントデータ）をその表示位置データと共に読み出し、図2の通話制御部6、送受信部3及びアンテナ5を介して他の端末に送信する等の処理を行うことができる。

【0039】図9には上記文字入力装置の辞書検索部15の詳細構成が示されている。辞書検索部15は、この辞書検索部15全体を統括制御する制御部40と、キー入力された文字や文字列のコードを蓄える文字入力バッファ41と、単語辞書14の辞書検索時に用いられるコードポインタ42と、辞書検索の結果得られた候補文字または文字列のコードを保持するための検索結果文字出力バッファ43とから構成されている。

【0040】図10には、単語辞書14に記憶されている内容が示されている。つまり、テンキー103の操作による数字のコードに対応して、仮名による文字または文字列、漢字による文字または文字列及び、品詞、場所、時間等の属性情報、その他の情報からなる辞書情報が対応付けられて記憶されている。より具体的には、単語辞書14の構成は図11から図13に示される通りに構成される。まず、単語辞書14は、図11に示す通り、文字数単位に区分されたブロックから構成されている。各文字数対応のブロックは、図12に示される通り、当該文字数の数字列に対応した複数のブランチから構成される。ここでは、文字数が5文字のブロックに5文字の数字列に対応する複数のブランチが存在し、その中の数字列「41281」に対応するブランチが明示され、他のブランチでは所定数字が「*」により示されている。更に、図13には、数字列「41281」に対応するブランチの内部が示されている。ブランチ内には、存在する場合の後続数字（0）から（9）に対応したテーブル（従って、後続数字が例えば（1）と（8）とだけである場合には、2テーブル）と、後続数字が無い場合の数字列に対応する候補の先頭を示すSOS（00）に対応するテーブルとが含まれている。後続数字（0）から（9）に対応したテーブルには、対応の後続数字

と、次テーブルのポインタNTPと、次ブランチのポインタNBPとがセットされている。一方、SOS（00）に対応するテーブルには、後続数字が無い場合の（つまり、この例では数字列「41281」に対応する）候補の先頭を示すコードSOS（00）、文字または文字列コードStr1~Strn（1からnまでの文字コードでn候補を表わす）、候補文字または候補文字列コードの終了を示すコードEOS（FF）、ブランチの終了を示すコードEOB（FF）がセットされている。候補が複数あるときには、複数の候補の間にも候補の先頭を示すコードSOS（00）が登録される。属性情報を記憶させる場合には、それぞれの候補の文字列コードStr1~Strnの次に、属性情報であることを示す符号と共にセットされる。

【0041】上記のように、1ブランチ内に複数の候補文字または候補文字列が存在するのは、通常の日本語ワードプロセッサのように、同音異義語が存在することによるばかりでなく、1キーに複数の仮名文字を割り当てたためである。例えば、「1」キー、「2」キーが続けて操作された場合は、「あ」行と「か」行の文字列の入力であるから、「赤（あか）」、「秋（あき）」、「池（いけ）」、「桶（おけ）」等が候補文字列として存在する。図13に例示の数字列「41281」の場合には、「東京（とうきょう）」、「提供（ていきょう）」等が存在する。上記の例で明らかな様に、拗音の候補、濁音の候補、半濁音の候補等を清音に置き換えて辞書化してある。

【0042】図9に示された辞書検索部15の制御部40は、図14に示されるフローチャートのプログラムにより単語辞書14の検索処理を行うので、このフローチャートに従って、制御部40の動作を説明する。制御部40は文字入力バッファ41をクリアし（S21）、入力文字または入力文字列のコード（数字キーのコード）が到来するのを待つ（S22）。この例では、操作者が図15のST1に示すように「とうきょう」を入力文字とする。そこで、操作者は携帯無線電話機のテンキー103の対応キーを操作することになる。この図15のテンキー103では、図1のテンキー103とは異なり、丸い四隅を有するキートップ自体に仮名文字が表記され、しかも、仮名文字が平仮名ではなくカタカナとなっている。本文入力装置は、図1の実施の形態のテンキー103であっても、この図15のテンキー103であっても適切な入力が可能であることを示す。テンキー103の数字キーは図15のST2に示されるように「41281」と操作される。操作者はST2の「41281」に対応する仮名文字の内、枠により囲った仮名文字を所望して入力を行ったことを示す。

【0043】すると、図7において説明した入力制御部12の動作により、操作に係る数字キーに対応するコードが得られ、上記「41281」に対応するコード列が

文字入力バッファ41に格納される。次に操作者は、図15のST3に示すように、変換を求めて変換／次候補キーである「*」キーを操作する。この「*」キーについても、図7において説明した入力制御部12の動作により、コードに変換されて中央制御部13へ送出される。これを受けた中央制御部13は図9の制御部40に検索スタート信号を送出する。そこで、図14に示されるように、検索スタートかを監視していた(S23)制御部40は、コードポインタ42をリセットし(S24)、データセレクト信号をセット状態とする(S25)。次に、制御部40は、文字入力バッファ41に格納されているコードを先頭から取り出し、単語辞書14の文字数1のブロックから検索を始める。検索の手法は何番目の数字についても同様であるので、ここでは、文字数3のブロックにおける検索から説明する。

【0044】図16には、文字数3のブロックにおける検索からの処理が示されている。数字列「412」に依りて、文字数3のブロックのアドレス「3F0F」のテーブルに行き着く。このテーブルの後続数字は「1」であり、文字入力バッファ41に格納されている数字列「41281」の第4番目の数字「8」とは異なるので、NTPに基づき次のテーブルを検索する。ここでは、数字列「412」に続く数字が「1」である候補と、「8」である候補とだけが存在しているため、たちまち、後続数字が「8」のテーブルを検索できている。通常は、後続数字が「1」のテーブルの次は、後続数字が「2」のテーブル、その次は後続数字が「3」のテーブル・・・というようにして、後続数字が「8」のテーブルに到達する。

【0045】後続数字が一致すると、このテーブルのNBPに基づき文字数4のブランチ「4128」の第1テーブルに行き着く。このテーブルでは、後続数字が「1」であり、文字入力バッファ41に格納されている数字列「41281」の第5番目の数字「1」と一致する。後続数字が一致すると、このテーブルのNBPに基づき次のブランチ「41281」のテーブルに行き着く。ここでは本来、文字入力バッファ41に格納されている後続数字が無いから、後続数字のエリアに「00」がセットされているテーブルを検索する。この図16の例では、単語辞書14においても数字列「41281」に続く数字を持つ候補が無いこと、つまりテーブルがないことを前提としており、ブランチ「4128」のテーブルから、直ちに後続数字のエリアに「00(=SOS)」がセットされているアドレス「98AC」のテーブルに行き着いている。

【0046】図16の例では、第1番目の候補文字列に「東京」がセットされており、コードポインタ42の出力値「0」に対応して、「東京」のコードが読み出される。以上の処理が、図14におけるステップS25の「検索」からステップS26、S27、S28のループ

の処理に対応している。ステップ27におけるコードポインタ42の歩進は、図16におけるテーブルを順次検索するときに対応すると共に、目的のテーブルにおいて、各候補文字を指示して読み出す場合にも対応している。従って、実際的には図16において行われている候補文字の検索は、図10に示した単語辞書14を検索している場合と等価である。なお、この例では、「東京」が得られたが、もし、入力された数字列に対応する候補文字が単語辞書14内に記憶されていなければ、コードポインタ42にNEXT信号を与えてその値を歩進し(S27)、ステップS28からステップS26へのループを繰り返す、最終的に候補文字または候補文字列が検出できないときには、ステップS28においてYESへ分岐する。つまり、コードポインタ42からEND信号が返される。そこで、制御部40は検索結果情報により「該当なし」を中央制御部13へ送出する。「該当なし」を受けた中央制御部13は表示制御部17に「該当なし」の文字フォントを送出し、該当する候補がない旨をLCD表示装置16に表示させる(S29)。

【0047】上記のようにして得られた「東京」のコードは検索結果文字出力バッファ43に出力される(S30)。検索結果情報により結果出力の通知が中央制御部13に与えられ、「東京」のコードは検索結果文字出力バッファ43から中央制御部13に取り込まれ、更に表示制御部17に送られ、図8の説明において説明した通りにして、(LCD)表示装置16における表示に供される。つまり、(LCD)表示装置16には「東京」が表示される。辞書検索部15の制御部40は確定キーの操作または次候補キーの操作を監視している(S31、S32)。確定キーの操作または次候補キーの操作は前述の変換キーの操作の場合と同様にして入力制御部12から中央制御部13へ送出される。

【0048】図15の例では、「東京」が所望の文字であるので、ST4に示すように、確定キーが操作されている。中央制御部13は確定キーのコードを得て、検索スタート信号をインアクティブに遷移させる。辞書検索部15の制御部40はこれを受けてステップ31からYESへ分岐し、上記候補文字を確定させる。なお、単語辞書14に「41281」に対応して、平仮名の「とうきょう」、漢字の「東京」が順に格納されているときには、図15のST5に括弧にて示されるように、まず、平仮名の「とうきょう」の表示に対して次候補キーが操作され、これによりコードポインタ42にNEXT信号を与えてその値を歩進し(S27)、次候補の漢字の「東京」のコードを得てステップS26からS30へと進む。この場合も、漢字の「東京」が所望の文字であるので、ST4に示すように、確定キーが操作される。以降の処理は前述と同様に処理が行われることになる。

【0049】以上の通り、第1の実施の形態に係る文字入力装置は、各キーに複数の仮名文字が割り当てられ、

かつ、変換／次候補キー、確定キーを備えるので、操作されたキーに割り当てられた仮名文字に対応する候補文字または操作された複数のキーに割り当てられた仮名文字列の組み合わせから構成される候補文字列を適切に入力して選択することができる。つまり、少ないキーを持つ情報端末には好適である。

【0050】上記第1の実施の形態では、変換／次候補キーである「＊」キーを操作しなければ、表示部102に何等の表示がなされないため、正しいキー操作がなされているのか否か判らず、操作性が必ずしも良くない。そこで、第2の実施の形態では、辞書検索部15の制御部40が備える図14のフローチャートに対応するプログラムを図17のフローチャートに対応するプログラムに代える。つまり、ステップS22において、制御部40は入力文字または入力文字列のコード（数字キーのコード）が到来するのを待つ。テンキー103の数字キーが操作されると、中央制御部13はこれに対応するコードを文字入力バッファ41に格納すると共に、図17のステップS100に示されるように表示制御部17へ転送する。このように、辞書検索部15（制御部40）は、テンキー103が操作されると、このキーに対応するコード（数字のコード）を検出し、表示制御部17へ送出して表示に供するコード送出手段として機能する。表示制御部17ではこれをパターン化して画像メモリ33に書き込み、対応する数字を表示させる。制御部40は変換／次候補キーである「＊」キーの操作を監視しているが（S23）、この「＊」キー対応のコードが到来しなければ、ステップS22に戻って、入力文字または入力文字列のコード（数字キーのコード）の到来を待つ。

【0051】「とうきょう」に対応して「41281」とキー入力した場合には、各キーの操作毎に、図18に示されるように、「4」、「41」、・・・、「41281」と操作されたキー対応の数字が増加して表示され、キー入力が受け付けられていること及びその操作が間違いないこと、つまり、「とうきょう」のそれぞれの仮名文字が割り当てられている数字キーが操作されていることを確認することができる。変換／次候補キーである「＊」キーが操作された場合においては、第1の実施の形態と同様に単語辞書14を用いた文字変換が行われ、単語辞書14から対応する候補文字のコードが読み出され、これが上記数字列「41281」の表示に代えられて表示される。なお、図18の例では、単語辞書14の数字列「41281」に対応するテーブルの第1候補文字列が「とうきょう」と平仮名表記になっていたことを示している。

【0052】図19には、第3の実施の形態に係る文字入力装置における辞書検索部15の制御部40が備えるプログラムに対応するフローチャートが示されている。この実施の形態においても、ステップS22において、

制御部40は入力文字または入力文字列のコード（数字キーのコード）が到来するのを待つ。テンキー103の数字キーが操作されると、中央制御部13はこれに対応するコードを文字入力バッファ41に格納すると共に、図19のS110に示されるように数字に対応する行文字を表示制御部17へ転送する。つまり、中央制御部13は、数字コードと行文字との変換テーブルを有しており、数字コードから行文字を得て表示制御部17へ転送する。表示制御部17ではこれをパターン化して画像メモリ33に書き込み、対応する文字を表示させる。上記テーブルを詳述すると、「1」のコードと「あ」のコード、「2」のコードと「か」のコード、「3」のコードと「さ」のコード、・・・、「0」のコードと「わ」のコードとが対応付けられたテーブルである。

【0053】図19に示す通り、制御部40は変換／次候補キーである「＊」キーの操作を監視しているが（S23）、この「＊」キー対応のコードが到来しなければ、ステップS22に戻って、入力文字または入力文字列のコード（数字キーのコード）の到来を待つ。第1の実施の形態の場合と同様に、「とうきょう」に対応して「41281」とキー入力した場合には、各キーの操作毎に、図20に示されるように、「た」、「たあ」、・・・、「たあかやあ」と、操作されたキー対応の行文字が増加して表示され、キー入力が受け付けられていること及びその操作が間違いないこと、つまり、「とうきょう」のそれぞれの仮名文字が割り当てられているキーが操作されていることを確認することができる。変換／次候補キーである「＊」キーが操作された場合においては、第1の実施の形態と同様に単語辞書14を用いた文字変換が行われ、単語辞書14から対応する候補文字のコードが読み出され、これが上記行文字列「たあかやあ」の表示に代えられて表示される。なお、図20の例では、単語辞書14の数字列「41281」に対応するテーブルの第1候補文字列が「とうきょう」と平仮名表記になっていたことを示している。

【0054】図21には、上記第3の実施の形態において、行文字をローマ字により表示する第3の実施の形態の変形例が示されている。この変形例の場合、中央制御部13が備えるテーブルでは、「1」のコードと「A」のコード、「2」のコードと「K」のコード、「3」のコードと「S」のコード、・・・、「0」のコードと「W」のコードとが対応付けられている。従って、「とうきょう」に対応して「41281」とキー入力した場合には、各キーの操作毎に、図21に示されるように、「T」、「TA」、・・・、「TAKYA」と、操作されたキー対応の行文字が増加して表示され、キー入力が受け付けられていること及びその操作が間違いないこと、つまり、「とうきょう」のそれぞれの仮名文字が割り当てられているキーが操作されていることを確認することができる。なお、この第3の実施の形態では、中央

制御部13が備えるテーブルにより変換を行ったが、他の構成として、図5に示される入力制御部12に備えられているメモリテーブル22により、平仮名で行名の文字を、或いはローマ字で行名の文字を得るようにすることも可能である。この場合、単語辞書14についても、数字または数字列と候補文字または候補文字列を対応させるのではなく、平仮名の行名の文字または文字列と候補文字または候補文字列を対応させ、或いはローマ字の行名の文字または文字列と候補文字または候補文字列を対応させて構成する。このように構成しても、キー入力

【0055】図22には、第4の実施の形態に係る文字入力装置における辞書検索部15の制御部40が備えるプログラムに対応するフローチャートが示されている。この実施の形態では、制御部40は変換/次候補キーである「*」キーの操作を監視することなく、コードポインタ42をリセットし(S24)、データセレクト信号をセット状態とし(S25)、更に、文字入力バッファ41に格納されているコードを先頭から取り出し、単語辞書14の文字数1のブロックから検索を始める。

【0056】この第4の実施の形態において、「とうきょう」に対応して「41281」とキー入力した場合には、各キーの操作毎に、図23に示されるように、「た」、「第」、「待機」、・・・、「東京」が表示される。つまり、単語辞書14の「4」に対応する候補文字のテーブルの第1候補が「た」であり、単語辞書14の「41」に対応する候補文字のテーブルの第1候補が「第」であり、単語辞書14の「412」に対応する候補文字のテーブルの第1候補が「待機」であり、単語辞書14の「4128」に対応する候補文字のテーブルの第1候補が「退去」であり、単語辞書14の「41281」に対応する候補文字のテーブルの第1候補が「東京」であることにより、変換/次候補キーを何等操作することなく、上記の順で変換された候補文字または候補文字列が表示される。

【0057】変換/次候補キーを操作しない限りは、現在の検索結果を表示に供し(S33)、ステップS22へ戻って処理を継続する。また、該当する候補がない旨をLCD表示装置16に表示させた場合(S29)において、確定キーまたは変換/次候補キーの操作を検出し(S34、S35)、これらのキー操作がなければステップS22へ戻って処理を継続し、上記ステップS34、または、S35において、確定キーまたは変換/次候補キーが操作されると異常処理へ移行するようにしている。このため、本実施例の形態は入力途中の数字に対応する候補文字または候補文字列がない場合において、確定キーまたは変換/次候補キーが操作されるという不

正操作に対応する構成を有することになる。

【0058】なお、入力途中において候補文字無しとなることを避けるため、単語辞書14の各数字に、当該行名の文字を割り当てておくこともできる。この場合、変換の結果、図20に示したように行名の文字が表示される。また、図24には、変換/次候補キーを操作しないときの変換結果であることを示すため、単語辞書14の数字または数字列に対応する候補文字のテーブルの第1候補に、本来の第1候補の平仮名コードをセットした変形例の表示結果が示されている。つまり、単語辞書14の「4」に対応する候補文字のテーブルの第1候補が「た」であり、単語辞書14の「41」に対応する候補文字のテーブルの第1候補が「だい」であり、単語辞書14の「412」に対応する候補文字のテーブルの第1候補が「たいき」であり、単語辞書14の「4128」に対応する候補文字のテーブルの第1候補が「たいきょ」であり、単語辞書14の「41281」に対応する候補文字のテーブルの第1候補が「とうきょう」である。これにより、「41281」とキー入力した場合には、各キーの操作毎に、図24に示されるように、「た」、「だい」、「たいき」、・・・、「とうきょう」が表示される。このように、キー操作に応じて平仮名文字が表示され、変換/次候補キーを操作していないことが明瞭であり、しかも、正しく入力できているか否かを知ることができる。

【0059】上記各実施の形態では、変換候補を1つだけ表示したが、第5の実施の形態では、変換の候補文字または候補文字列が複数ある場合には、これらを所定個ずつ表示する。図25には、第5の実施の形態に係る文字入力装置における辞書検索部15の制御部40が備えるプログラムに対応するフローチャートの要部が示されている。この第5の実施の形態では、第1の実施の形態の図14のステップS30～S32、S27に対応する処理を図25に示すように行う。つまり、単語辞書14から候補を取り出すときには存在する所定個までの候補を取り出し、選択数字と共に検索結果文字出力バッファ43へ出力する(S30-A)。これにより、表示部102の表示画面には、図26の下方に示すように、「東京」、「提供」、「東急」、「帝京」が、選択数字1～4と共に表示される。

【0060】制御部40は選択数字の入力を待ち(S31-A)、入力された場合には、この候補文字を確定させる。また、選択数字の入力がなければ、次候補キーの操作を検出し(S32)、次候補キーが操作されると、コードポインタ42を上記所定候補数分(上記図26の例では、4個分)歩進し(S27-A)、他の候補の検索へと進む。このように第5の実施の形態では、複数の候補が存在する場合には、これらを同時表示して選択に供するので、候補文字の確定を迅速に行うことができる効果がある。

【0061】図27には、第6の実施の形態に係る文字入力装置の構成図が示されている。この実施の形態では、表示装置16の画面上に貼着されるタッチパネル50が設けられ、このタッチパネル50からの操作入力座標値を入力制御部12-Aが検出する。つまり、表示装置16に相当の表示部102の画面には、図29に示されるように透明シート51が貼着されている。透明シート51の下部所定位置には透明電極52が設けられ、透明電極52に対向する画面上の位置には、例えば、透明の異方向導電性ゴム等を介して透明対向電極53が設けられている。透明シート51の下部所定位置の透明電極52、透明電極52に対向する透明対向電極53は、図のように、例えば、4個設けられ、これらには、図4において説明したキーマトリックスと同様に、カラム方向ライン及びびろう方向ラインが接続され、また、図4から図7において説明した如くにして、いずれの位置が操作されたかを入力制御部12-Aが検出している。つまり、入力制御部12-Aは、タッチパネル50における入力操作位置を検出する位置検出手段55を構成している。

【0062】図28には、第6の実施の形態に係る文字入力装置における辞書検索部15の制御部40が備えるプログラムに対応するフローチャートが示されている。この実施の形態では、第1の実施の形態の図14のステップS30～S32、S27に対応する処理を図28に示すように行う。つまり、単語辞書14から候補を取り出すときには存在する所定個までの候補を取り出し、「次候補」の文字（または、「スクロール」）と共に検索結果文字出力（LCD表示用）バッファ43へ出力する（S30-A）。これにより、図29の下方に示すように、表示制御部17は表示部102の表示画面の透明電極52の位置に、「東京」、「提供」、「東急」「次候補」を表示する（S36）。制御部40はタッチパネル50における操作位置の検出を行い（S37）、操作位置の座標に基づき対応して表示されている候補文字を検出し（S38）、この候補文字を確定させる（S40）。このように、辞書検索部15は確定手段として機能する。

【0063】また、次候補キーの操作を検出した場合には（S38）、表示用ポインタを変更して（S39）、コードポインタ42を上記所定候補数分（上記図29の例では、3個分）歩進し（S27-A）、他の候補の検索へと進む。つまり単語辞書14の対応するテーブルの候補文字列について候補を表示するためのポインタと単語辞書14のテーブル内から候補文字を検索のためのポインタとが共通であるときには、これらを共に3個分進めることにより、存在するときには次の3候補が取り出され、表示される。このように第6の実施の形態では、複数の候補が存在する場合には、これらを同時表示してタッチパネル50により選択可能とするので、候補文字

の確定を確実に迅速に行うことができる効果がある。

【0064】本発明の各実施の形態に係る文字入力装置は、入力文字の訂正を行う等のために、図30に示すようにカーソルCを表示させると共に、キーボード11にカーソル移動キー61、62、消去キー63が備えられている。ここでは、1行分の文字表示を行うため、カーソル移動キー61、62は、左右方向の一对のキーにより構成されているが、2行以上の文字表示を行う構成を採用する場合には、これに加えて上下方向の一对のカーソル移動キーが設けられる。カーソル移動キー61、62の操作情報も、図4から図7により説明した他のキーの操作情報と同様に、入力制御部12により検出され、中央制御部13を経由して表示制御部17へ与えられる。

【0065】表示制御部17はカーソル表示について、カーソルポインタに基づきカーソルCを1文字表示領域単位で文字表示領域の下行に移動表示する。そして、表示制御部17は、文字の入力とカーソル移動キーの操作情報とに基づき、カーソルポインタを図31のフローチャートに示すプログラムにより制御する。つまり、文字コードの到来を検出し（S41）、文字コードが到来するとカーソルポインタを1歩進する（S42）。これによって、カーソルCは1文字分前進する。また、文字コードが到来しない場合には、カーソル移動が生じたかをカーソル移動キーの操作情報の到来により検出し（S43）、操作情報が到来しなければ、ステップS41へ戻って監視が続けられ、カーソル移動が生じると移動方向に応じてカーソルポインタが増減される（S44）。これにより、カーソルCが1文字単位で前進または後退することになる。誤入力の文字を訂正する場合は、カーソル移動キー61、62によりカーソルCを訂正すべき文字位置に移動し、消去キー63を操作して消去し、正しい文字を入力する。この場合、第1の実施の形態では、変換/次候補キーを操作した後でなければ表示が行われないが、ステップS29の該当する候補がない旨をLCD表示装置16に表示させた後の異常処理において、第2の実施の形態の如くに入力数字または入力数字列を表示するようにし、ここで訂正を保証する。つまり異常処理では、文字列入力バッファ41にセットされている数字列を表示制御部17へ送出する。訂正後に変換/次候補キーが操作されると、図14のフローチャートのステップS23以降の処理を行う。

【0066】図32には、第7の実施の形態に係る文字入力装置の構成図が示されている。この実施の形態では、中央制御部13に再度検索SW（スイッチ）18が接続され、単語辞書検索の結果、該当する候補がない旨がLCD表示装置16に表示された場合に、入力文字または入力文字列について変更を行い、再度辞書検索による変換を行わせる指示を与え得ようになっている。つまり、中央制御部13及び辞書検索部15は、候補文字

または候補文字列が得られないときに、上記再度検索SW18がオンであることを条件に、入力文字または入力文字列について変更を行い、再度変換を行わせる変更手段60として機能するものである。なお、再度検索SW18は、機械的なスイッチではなく、レジスタで構成されている。

【0067】図33には、第7の実施の形態に係る文字入力装置における辞書検索部15の制御部40が備えるプログラムに対応するフローチャートが示されている。この実施の形態では、単語辞書14の検索処理において、制御部40は文字入力バッファ41をクリアすると共に再度検索SW18をリセットし(S48)、入力文字または入力文字列のコード(数字キーのコード)が到来するのを待つ(S22)。これ以降の処理は第1の実施の形態と同様であり、ステップS29において、該当する候補がない旨がLCD表示装置16に表示された場合に、ステップS45からステップS47の処理を行う点で相違している。

【0068】つまり、ステップS29において、該当する候補がない旨がLCD表示装置16に表示された場合には、次に、再度検索SW18のオン・オフを検出する(S45)。最初のときには、ステップS48におけるリセットによりオフとなっているから、NOへ分岐し、最後の1文字(数字)を削除し(S46)、再度検索SW18をオンとし(S47)、削除の結果得られた文字(数字)または文字(数字)列について、単語辞書14の検索を行うため、ステップS24からの処理を繰り返す。このように文字列の最後尾の1文字を削除することにより、助詞等の付属語が削除されて単語辞書14に登録されている候補文字に一致することが期待される。つまり、本実施の形態により、入力文字列の自動訂正が行われる。

【0069】なお、このような文字列の変更にも拘らず、ステップS29において、該当する候補がない旨がLCD表示装置16に表示された場合には、既に、再度検索SW18がオンとなっているため、ステップS45においてはYESへ分岐し、異常処理へと進む。この異常処理では、図30、図31において説明した通りにして、訂正を行うことが可能である。また、本実施の形態の機能を行うか否かについて、キーボード11から例えば特番(通常使用されないキー入力であって、例えば、「#*#?(?=数字)?(=?=数字)」等)の入力がなされた場合には、設定を解除し、自動訂正は行わない。その後、自動訂正が必要となると、上記と同じ特番を入力して自動訂正機能をオンとすることができる。

【0070】図34には、第8の実施の形態に係る文字入力装置の構成図が示されている。この実施の形態では、中央制御部13にエラー補正テーブル70とメモリ(RMEM)71、メモリ(KMEM)72が接続されている。本実施の形態のエラー補正テーブル70は、キー操作の

際に誤操作となるキーの候補テーブルであり、図35に示されるように構成されている。つまり、数字キーの種類「1」～「0」に対応して、誤操作する可能性のあるキー(即ち、配置において近接するキー)を確率の高い順に並べたものである。メモリ71には、置き換えに使用している数字候補の順位が記憶され、メモリ72には、入力文字または入力文字列の何番目を置き換えているかがセットされる。中央制御部13及び辞書検索部15は、候補文字または候補文字列が得られないときに、上記エラー補正テーブル70を使用して、入力文字または入力文字列について変更を行い、再度変換を行わせる変更手段60-Aとして機能するものである。

【0071】図36、図37には、第8の実施の形態に係る文字入力装置における辞書検索部15の制御部40が備えるプログラムに対応するフローチャートが示されている。この実施の形態では、単語辞書14の検索処理において、制御部40は文字入力バッファ41をクリアすると共にメモリ(RMEM)71、メモリ(KMEM)72をクリアし(S50)、入力文字または入力文字列のコード(数字キーのコード)が到来するのを待つ(S22)。これ以降の処理は第1の実施の形態と同様であり、ステップS29において、該当する候補がない旨がLCD表示装置16に表示された場合に、図37に示されるブレ異常処理へ進む点で相違している。

【0072】図37に示されるブレ異常処理では、メモリ71の値を「1」インクリメントし(S51)、エラーテーブル70に候補があるかを検出する(S52)。つまり、置換すべき第1候補があるかを検出している。当初は、図35から明らかなように、候補があるから、YESへ分岐し、メモリ72の内容を「1」インクリメントし(S54)、この場合は入力文字または入力文字列の第1番目を置換すべきことを指示する。そして、メモリ72により指示された位置の文字が文字入力バッファ41に存在するかを検出する(S55)。1文字以上の文字が存在するときには、エラー補正テーブル70を検索して、メモリ72が示す文字とメモリ71が示す候補順位とから対応の文字を検索し(S56)、ここで得られた文字で文字列入力バッファ41内のメモリ72が示す位置の文字を置換し、図36のフローチャートのステップS24からの処理を継続する。つまり、置換の結果得られた文字列について単語辞書14を検索して候補文字を得る。上記の結果、また、検索結果が得られなければ、再度ブレ異常処理が行われ、次の候補について置換が行われる。或る文字位置の候補がなくなると、ステップS52においてNOへ分岐し、メモリ71をリセットし(S53)、メモリ72の内容を「1」インクリメントする(S54)。これにより、入力文字列の第2番目の文字について置換が行われて行く。斯して、この実施の形態によれば、キー操作の誤りにより近接するキーを操作した場合に自動的に置換訂正されて、所望の入力

を行うことが可能である。このようにして自動置換訂正が行われても、検索結果が得られることなく、文字列中の最後の文字の置換が終了するとステップS55においてNOへ分岐し、異常処理が行われる。

【0073】上記異常処理では、図30、図31において説明した通りにして、訂正を行うことが可能である。また、本実施の形態の機能を行うか否かについて、キーボード11から例えば特番（通常使用されないキー入力であって、例えば、「#*#?（数字）?（数字）」等）の入力がなされた場合には、設定を解除し、置換訂正は行わない。その後、置換訂正が必要となると、上記と同じ特番を入力して自動置換訂正機能をオンとすることができる。なお、本実施の形態では、入力文字列の先頭側から置換を行ったが、末尾から置換を行っても同様な効果が期待できる。

【0074】図38には、第9の実施の形態に係る文字入力装置の構成図が示されている。この実施の形態では、中央制御部13にキャラクタ範囲情報テーブル75が接続されており、このキャラクタ範囲情報テーブル75には、図39に示すように、送信相手端末の識別情報（例えば、電話番号）に対応して扱えるキャラクタの範囲（仮名までか漢字を扱えるか）が予め記憶されている。中央制御部13はキャラクタ範囲情報テーブル75から範囲情報を得て文字変換手段である辞書検索部15へ渡す範囲情報取得手段76を構成する。

【0075】範囲情報取得手段76である中央制御部13は図40のフローチャートのプログラムを実行することにより、範囲情報を取得する。すなわち、相手先指定があるかを検出する（S61）。この実施の形態では、文字入力装置のモードとなる前に、例えば、特番により相手先指定により入力を行うことを指示し、相手端末の識別情報（電話番号）を入力する。中央制御部13はこれを取り込み（S62）、キャラクタ範囲情報テーブル75を検索して対応する宛先端末が扱えるキャラクタの範囲を示す範囲情報を取得する（S63）。この取得した範囲情報を上記識別情報（電話番号）と共にレジスタに記憶しておく（S64）。これ以降、単語辞書14に対する検索ルーチンへ進む。

【0076】図41には、第9の実施の形態に係る文字入力装置における辞書検索部15の制御部40が備えるプログラムに対応するフローチャートが示されている。この実施の形態では、ステップS26において候補文字または候補文字列を検出するまでの処理は、第1の実施の形態に等しい。しかし、候補を検出すると、相手端末において漢字が扱えるかを前述のレジスタを参照して検出し（S60）、漢字が扱えない場合には、仮名コードの候補を選択する（S61）。この場合、漢字コードを付記表示のため選択しておいても良い。これにより、相手端末が漢字を扱えない場合には、仮名による候補が選択され（付記表記する実施の形態にあっては、付記表記

の漢字と共に）表示される。

【0077】上記のようにして、入力文字が確定すると、図2に示されるように、通話制御部6へ文字入出力部7から文字列コード及び前述のレジスタに記憶されていた相手端末の識別情報が与えられ、発呼及びデータの送信が送受信部3及びアンテナ5を介して行われる。この様にして、相手端末の能力に応じた文字変換がなされ、適切なコードが送られ、相手端末で処理が不能となることはない。なお、キャラクタ範囲情報テーブル75に登録の無い識別情報が入力されたときには、漢字を扱えないものとして処理を行う。つまり、低機能の処理を行うことにより、相手端末において処理が不能となることを防止する。

【0078】なお、第9の実施の形態では、漢字を扱えるか否かによる範囲としたが、他に、数字まで、或いは、ローマ字表記まで、または、同一種による外字までの範囲等、範囲の区分があり得る。これらの場合には、対応してテーブルの範囲情報を細分しておく。このようにする場合（本第9の実施の形態でもそうであるが）、低機能の処理に合わせた辞書構成が必要である。つまり、漢字の候補以外に同じ単語に対して仮名文字コードを用意する。また、数字の候補、ローマ字表記の候補が用意されて辞書化が行われる。

【0079】更に、第9の実施の形態では、予め範囲情報を用意したが、このキャラクタ範囲情報テーブル75の内容は更新可能である。つまり、特番等により、キャラクタ範囲情報テーブル75の内容は更新を指示し、相手先識別情報と範囲情報のペアを入力する。これにより、中央制御部13がキャラクタ範囲情報テーブル75の内容を更新する。同一相手先識別情報のときには、情報が上書きされ、新規相手先識別情報のときには、新規登録がなされる。更に、相手端末との通信時に前手順を設けてDTMF信号により、範囲情報を得るようにしても良く、また、交換網が相手端末から得た範囲情報を制御チャネルを使用して送出するようにしても良い。これらの場合でも、相手端末の能力に応じたメッセージ等の文字列を送信することができる効果がある。

【0080】次に、本発明の第10の実施の形態について説明する。この実施の形態に係る文字入力装置が適用された携帯無線電話機は、図42に示すようにテンキー103の下側に複数の処理モードを選択するためのモードキー64と、表示部102において、入力する文字または文字列の位置を示すカーソルKを移動させるための左移動キー65、右移動キー66が備えられている。これらのキーは、所定特番の入力により、テンキー103のいずれかに代用させても良いものである。モードキー64は操作毎に、保有するモードを次々に呼び出すためのものであり、例えば、本装置が、通話モード、データ通信モード、文字入力モード、電話番号登録モード、定型文入力モード、検索モード等を有している。係る場合

には、初期状態では通話モードであり、1回のモードキー64の操作により通話モードとなり、更に1回のモードキー64の操作によりデータ通信モードとなり、以下操作毎にモードが変更され、最後のモードのときに更にモードキー64を操作すると通話モードへ戻るように構成されている。図42に示すように表示部102に複数行の表示がなされているとき、左移動キー65、または、右移動キー66を操作し続けると、この行に亘って移動させることができる。つまり、第1行目最右位置にカーソルKが位置しているとき、例えば、右移動キー66を操作し続けると、第1行目最左位置から第2行目最右位置に移動し、更に第2行目最左位置方向へと移動する。このカーソルKの表示制御は、図30及び図31を用いて説明したように、キー操作情報を図43に示す中央制御部13Aが入力制御部12を介して取り込み、これを表示制御部17へ与えることにより、表示制御部17が行うものである。

【0081】本実施の形態においては、入力に係る文字または文字列の属性を特定して、単語辞書14から適切な候補文字または候補文字列を検索でき、所望の単語（漢字等）を迅速に得るようにする。図43には、本実施の形態に係る文字入力装置の構成が示されている。つまり、この文字入力装置は、入力文字または入力文字列と変換結果の候補文字または候補文字列及びその属性情報とが対応付けられて記憶された辞書手段310と、複数の仮名文字が割り当てられた複数のキーと、文字変換を指示するための変換／次候補キーと、変換結果を確定させるための確定キーとを含み、文字または文字列及び必要な情報を入力するための入力手段300と、変換結果の候補文字または候補文字列を少なくとも表示し出力するための出力手段330と、上記入力手段300から入力された情報に基づき、入力文字または入力文字列の属性を特定する属性特定手段350と、上記入力手段300から入力されたキー対応の文字または入力された複数のキー対応の文字列について、上記辞書手段310を検索して候補文字または候補文字列を求めるに際して、上記属性特定手段350により特定された属性情報に該当する候補文字または候補文字列を求め、この候補文字または候補文字列を上記出力手段330へ送出する文字変換手段320Aとを具備する。上記属性特定手段350は、中央制御部13Aと入力単語属性記憶部19により構成される。入力単語属性記憶部19は、現在入力されている文字または文字列の属性情報を記憶するために用いられる。

【0082】図44には、辞書手段310を構成する単語辞書14の内容の一部が示されている。つまり、テンキー103の操作による数字のコードに対応して、仮名による文字または文字列、漢字等による文字または文字列の候補、更に、地名、人名、団体名等のように、上記漢字等による文字または文字列の候補に関する属性情報

が記憶されている。この例では、属性情報は上記漢字等による文字または文字列の候補に対し、1つとしてあるが、2つ以上記憶しておいても良い。例えば、属性「地名」は属性「場所」でもあり、属性「一般」の例えば「下さい。」の属性として「行為」を当てることができる。この単語辞書14の実際上の構成は、図11から図13を用いて説明した通りである。

【0083】また、本実施の形態の装置は、属性を特定するために、図45と図46に示すようなメモリを中央制御部13Aが備えている。図45には、この装置の処理に係る複数のモードと属性を得るための指示内容とが対応付けられて記憶された指示内容メモリ77が示されている。ここでは、通話モード、データ通信モードに対応しては「0」がセットされており、属性に関する処理が行われないことが示され、文字入力モードに対応しては「キー入力による指示」と登録がなされており、文字入力モードにおいては、キー入力により直接に属性情報が入力された場合にこれに従うことが示され、電話番号登録モード、定型文1の入力モード、検索3のモードに対応しては、カーソル位置メモリ78の飛び先アドレス「aaa」等がセットされており、検索1、検索2においては、属性情報（「地名」、「団体名」等）がそのままセットされている。図45におけるPはポインタであり、いずれのモードが実行されているかを示すものであり、この図45の例においては、電話番号登録モードが実行されていることを示している。

【0084】図46は、カーソルKの位置に対応して入力に係る文字または文字列の属性情報が対応付けられて記憶されたカーソル位置メモリ78を示す。例えば、電話番号登録モードでは、指示内容メモリ77から飛び先アドレスaaaを得て、カーソル位置メモリ78のアドレスaaaへ飛び、カーソルKの位置が「カーソル座標」のいずれに属するか（ $x_1 \sim x_2$ 、 $x_3 \sim x_4$ 、 $x_5 \sim x_6$ 、 $x_7 \sim x_8$ ）は、それぞれ、入力項目の「名前」、「所属」、「住所」、「電話番号」の領域の座標を表す。）に応じて属性が「人名」、「団体名」、「地名」、「数字」のいずれであるか特定される。つまり、電話番号登録モードでは、図42に示されるような表示が表示部102に行われ、入力する項目が、「名前」、「所属」、「住所」、「電話番号」であるため、これらの項目に対応する属性「人名」、「団体名」、「地名」、「数字」が記憶されている。

【0085】上記に対し、定型文1の入力モードでは、表示部102には図47に示されるように、所望の時（とき）に所望の場所で所望の行為をすることを入力するような表示が成されるので、座標 $x_{11} \sim x_{14}$ では属性が「時（とき）」であり、座標 $x_{15} \sim x_{18}$ では属性が「地名」であり、座標 $x_{19} \sim x_{22}$ では属性が「行為」となる。この定型文1の入力モードにより、「明日、昼（とき）」に「特許庁（場所）」で「会いましょう」。

(行為)」等を入力することが可能である。更に、検索1のモードは、例えば、上記電話番号登録モードにおいて登録した内容から、特定の場所に在住の人のデータを検索するためのもので、表示部102には図48に示されるように地名の入力を求める表示がなされ、例えば、「東京」を入力して東京に在住の人の検索をするように用いることができる。このため、検索1のモードでは、属性は「地名」であり、この属性「地名」が直接に指示内容メモリ77に検索1に対応付けられて記憶されている。更に、検索2のモードは、例えば、上記電話番号登録モードにおいて登録した内容から、特定の団体に所属する人のデータを検索するためのもので、表示部102には図49に示されるように団体名の入力を求める表示がなされ、例えば、「営業部」等を入力して営業部に所属する人の検索をするように用いることができる。このため、検索2のモードでは、属性は「団体名」であり、この属性「団体名」が直接に指示内容メモリ77に検索2に対応付けられて記憶されている。

【0086】中央制御部13Aは図50に示されるフローチャートのプログラムにより、属性情報特定手段350として動作するので、これを説明する。この装置の起動によりスタートとなり、モード検出を行う(S71)。つまり、モードキー64の操作に応じて図45のポインタPが対応するモードを指すように移動させ、このポインタPの指すモードを検出する。ここで、図45に示す指示内容メモリ77の当該モード「電話番号登録」を参照し、属性指示内容がセットされているかを検出する(S72)。「電話番号登録」に対応しては、座標位置メモリ78への飛び先アドレスaaaが設定されているので、カーソルKの座標を表示制御部17から得ると共に、この座標値と座標位置メモリ78への飛び先アドレスaaaに記憶されているカーソル座標の範囲とを比べて、カーソルKがどのカーソル座標の範囲にあるかを検出し、対応する属性情報を得る(S73)。例えば、図42に示されるようにカーソルKが入力項目「所属」の領域にあるときには、カーソルKの座標がカーソル位置メモリ78の座標x₁～x_nに範囲にあり、属性「団体名」を得ることができる。なお、検索1のモード等のような場合には、指示内容メモリ77から直接に属性情報を得ることができる。次に、中央制御部13Aは、この属性情報を入力単語属性記憶部19にセットし(S74)ステップ71へ戻って処理を継続する。なお、ステップS72において、属性指示内容がセットされていないことを検出した場合(「0」がセットされていることを検出した場合)には、「属性なし」を入力単語属性記憶部19にセットし(S75)ステップ71へ戻って処理を継続する。この様に、中央制御部13Aは常に属性情報を変更している。

【0087】図51には、本実施の形態において採用されている辞書検索部15Aの詳細が示されている。この

辞書検索部15Aは、中央制御部13Aが入力単語属性記憶部19の属性情報を読み出して送出してくるのを受け、記憶しておくための検索状態保持部45を備える点で、図9の辞書検索部15と相違している。制御部40Aは上記検索状態保持部45に属性情報をセットし、単語辞書14から単語データと共に属性情報を得たときに検索状態保持部45の属性情報と比較して候補の決定を行う。

【0088】上記制御部40Aは図52に示されるフローチャートのプログラムにより動作するので、これを説明する。制御部40Aは文字入力バッファ41をクリアし(S21)、中央制御部13Aが入力単語属性記憶部19から読み出して送出してくる属性情報を受けて検索状態保持部45にセットする(S62)。この結果、検索状態保持部45には、入力単語属性記憶部19の属性情報または「属性情報なし」がセットされる。つぎのステップS22から入力に係る数字または数字列と単語辞書14のコードとを比較するS26までは第1の実施の形態の場合と同様の動作を続け、ここで、入力された数字または数字列に対応する候補文字が単語辞書14内に記憶されていないければ、コードポインタ42にNEXT信号を与えてその値を歩進し(S27)、ステップS28においてコードポインタ42が指す候補が無くラストのエントリが終了したかを検出し、他にエントリがあればステップS26へ戻って処理を続ける。そして、ステップS28にてラストであることが検出されると、検索状態保持部45の内容を調べ属性情報がセットされているか否かを検出する(S63)。ここで、属性情報がセットされていると、リセットし「属性情報なし」に変え(S64)、更にステップS25に戻って動作を続ける。

【0089】一方、ステップS26において、候補が検出されると、検索状態保持部45の内容を調べ属性情報がセットされているか否かを検出する(S65)。ここで、属性情報がセットされていると、この属性情報と得られた候補の属性情報とが一致するか否かを検出し(S66)、一致しなければ、ステップS27へ進んで他の候補を検索する。属性情報は既述の通り、図13ではそれぞれの候補(Str1～n)の後に付加されて記憶されている。この様な処理を行う内にステップS66において属性情報が一致すると、この候補のコードを検索結果文字出力バッファ43に出力し(S30)、以降は第1の実施の形態と同様の処理を行う。また、ステップS65において属性情報がリセット、つまり、「属性情報なし」であると、属性情報の一致不一致を検出すること無く、第1の実施の形態と同様の処理を続ける。

【0090】斯して、本実施の形態によれば、入力に係る文字または文字列の属性を特定して、単語辞書14から候補文字または候補文字列を検索するとき当該属性の候補を抽出して出力するので、所望の単語等(漢字等)を迅速に得ることができる。つまり、入力された数字ま

たは数字列に対応する候補が複数ある場合に、所望の属性の候補（例えば、「地名」）ばかりが選択されて出力されるので、操作者はある程度絞られた候補の中から所望の変換結果に係る文字（漢字等）を得ることができ、効率的である。

【0091】なお、上記の構成例において、単語辞書14に単語毎の使用頻度情報を持たせ、使用頻度の高い候補から出力するように構成する構成例では、良く使用する候補がより早く出力され、変換結果を得るまでの時間をより短縮することができ、便利である。

【0092】次に、英語圏向けの本発明の実施の形態に係る文字入力装置を説明する。図53には本実施の形態に係る文字入力装置が適用された携帯無線電話機の正面図が示されている。ハンドセット101は、やや扁平な直方体状の筐体からなり、その表面中央から下部にかけては、4行3列のキーからなるテンキー（ダイヤルキー）103Eが設けられ、その上方には文字・記号等の情報を表示するための表示部102が設けられている。また、表示部102の上方には、送られてくる音声を取捨するための受話部104Aが設けられ、また、テンキー103Eの下方位置には音声を入力するための送話部105Aが設けられている。

【0093】上記の携帯無線電話機の内部構成は、図2に示した第1の実施の形態のものに等しい。図54には、図53の携帯無線電話機が文字入力装置としての動作モードとなった場合の構成図が示されている。この構成は、図2の携帯無線電話機の内部構成においては、入力部2と文字入出力部7とからなる部分に相当している。文字入力装置は、文字等の入力を行うためのキーボード11と、キーボード11におけるキー操作の情報を取り込み中央制御部13に送出する入力制御部12と、文字入力装置の各部を統括制御する中央制御部13と、入力文字または入力文字列と変換結果の候補文字または候補文字列とが対応付けられて記憶された辞書手段310Eである単語辞書14Eと、中央制御部13から与えられる入力文字または入力文字列について単語辞書14Eを参照して対応する候補文字または候補文字列を得る辞書検索部15と、文字等の情報が表示されるLCD等からなる表示装置16と、中央制御部13の制御の下に候補文字または候補文字列等を表示装置16に表示させるための制御を行う表示制御部17とを具備している。キーボード11のテンキー103Eの各数字キーには、アルファベットが複数個ずつ割り当てられている。つまり、通常のダイヤルキーの配置の数字キーの、「2」キーには「A」、「B」、「C」の3文字が割り当てられ、「3」キーには「D」、「E」、「F」の3文字が割り当てられ、以下同様に「9」キーまでにアルファベットが3文字ずつ割り当てられ、「0」キーには「Q」、「Z」が割り当てられている。また、「*」キーはconversion（変換／次候補）キーとされ、「#」キ

ーはdecision（確定）キーとされている。上記において、キーボード11は、複数のアルファベットが割り当てられた複数のキーと、文字変換を指示するための変換／次候補キーと、変換結果を確定させるための確定キーとを含み、文字または文字列を入力するための入力手段300であり、表示装置16は、変換結果の候補文字または候補文字列を少なくとも表示し出力するための出力手段330であり、中央制御部13及び辞書検索部15は、入力手段300から入力されたキー対応の文字または入力された複数のキー対応の文字列について、上記辞書手段310Eを検索して候補文字または候補文字列を求め、この候補文字または候補文字列を上記出力手段330へ送出する文字変換手段320を構成している。

【0094】上記キーボード11の構成は図4に示されている第1の実施の形態の構成に等しく、入力制御部12の構成は図5に示されている第1の実施の形態の構成に等しく、上記入力制御部12に含まれているメモリーテーブル22の内容は図6に示されている第1の実施の形態の構成に等しく、更に、上記入力制御部12に含まれている制御部20が行うキー読み込み動作は図7に示されている第1の実施の形態の動作に等しい。また、この実施の形態における文字入力装置の表示制御部17の詳細構成は図8に示されている第1の実施の形態の構成に等しく、更に、この実施の形態における文字入力装置の辞書検索部15の詳細構成は図9に示されている第1の実施の形態の構成に等しい。

【0095】図55には、単語辞書14Eに記憶されている内容が示されている。つまり、テンキー103Eの操作による数字のコードに対応して、アルファベットによる文字または文字列（word）及び、品詞、場所、時間等の属性情報、その他の辞書情報からなる辞書情報が対応付けられて記憶されている。例えば、テンキー103Eにより、「86596」と入力すると、「Tokyo」及びその属性情報等が得られる辞書構成となっている。より具体的には、単語辞書14Eの構成は図56から図58に示される通りに構成される。まず、単語辞書14Eは、図56に示す通り、文字数単位に区分されたブロックから構成されている。各文字数対応のブロックは、図57に示される通り、当該文字数の数字列に対応した複数のブランチから構成される。ここでは、文字数が5文字のブロックに5文字の数字列に対応する複数のブランチが存在し、その中の数字列「25625」に対応するブランチが明示され、その他の数字列に対応するブランチでは数字が「*」にて表示されている。更に、図58には、数字列「25625」に対応するブランチの内部詳細が示されている。ブランチ内には、存在する場合の後続数字（0）から（9）に対応したテーブル（従って、後続数字が例えば（1）と（8）とだけである場合には、2テーブル）と、後続数字が無い場合の数字列に対応する候補の先頭を示すSOS（00）に対応するテ

ーブルとが含まれている。後続数字(0)から(9)に対応したテーブルには、対応の後続数字と、次テーブルのポインタNTPと、次ブランチのポインタNBPとがセットされている。一方、後続数字が無い場合の数字列に対応する(SOS(00)が先頭にセットされた)テーブルには、後続数字が無い場合の(つまり、数字列「25625」に対応する)候補の先頭を示すコードSOS(00)、文字または文字列の候補コードStr1~Strm(n文字により構成されることを示す)、候補文字または候補文字列コードの終了を示すコードEOS(F) 10 (F)、ブランチの終了を示すコードEOB(FF)がセットされている。属性情報は候補コード(Str1~Strmにより構成)の、それぞれ後に識別情報を示す符号と共に付加されて記憶されている。

【0096】上記のように、1ブランチ内に複数の候補文字または候補文字列が存在するのは、1キーに複数のアルファベット文字を割り当てたためである。例えば、「2」キー、「3」キーが続けて操作された場合は、「A」、「B」、「C」のいずれかと「D」、「E」、「F」のいずれかとの組み合わせによる9通りの候補文字列の内、単語として意味のある「be」等が候補文字列として存在する。図57に例示の数字列「25625」の場合には、この数字列に対応して意味のある単語「clock」、「block」等が存在する。

【0097】辞書検索部15の制御部40は、第1の実施の形態と同様に、図14に示されるフローチャートのプログラムにより単語辞書14Eの検索処理を行うので、このフローチャートに従って、制御部40の動作を説明する。制御部40は文字入力バッファ41をクリアし(S21)、入力文字または入力文字列のコード(数字キーのコード)が到来するのを待つ(S22)。この例では、操作者が図59のST1に示すように「clock」を入力文字とする。そこで、操作者は携帯無線電話機のテンキー103Eの対応キーを操作することになる。この図59のテンキー103Eでは、図1のテンキー103Eとは異なり、丸い四隅を有するキートップ自体にアルファベット文字が表記されている。本文字入力装置は、図1の実施の形態のテンキー103であっても、この図59のテンキー103Eであっても適切な入力が可能であることを示す。テンキー103Eの数字キーは図59のST2に示されるように「25625」と操作される。操作者はST2の「25625」に対応するアルファベット文字の内、枠により囲ったアルファベット文字を所望して入力を行ったことを示す。

【0098】すると、図7において説明した入力制御部12の動作により、操作に係る数字キーに対応するコードが得られ、上記「25625」に対応するコード列が文字入力バッファ41に格納される。次に操作者は、図59のST3に示すように、変換を求めて変換/次候補キーである「*」キーを操作する。この「*」キーにつ

いても、図7において説明した入力制御部12の動作により、コードに変換されて中央制御部13へ送出される。これを受けた中央制御部13は図9の制御部40に検索スタート信号を送出する。そこで、図14に示されるように、検索スタートかを監視していた(S23)制御部40は、コードポインタ42をリセットし(S24)、データセクタ信号をセット状態とする(S25)。次に、制御部40は、文字入力バッファ41に格納されているコードを先頭から取り出し、単語辞書14Eの文字数1のブロックから検索を始める。検索の手法は何番目の数字についても同様であるので、ここでは、文字数3のブロックにおける検索から説明する。

【0099】図60には、文字数3のブロックにおける検索からの処理が示されている。数字列「25625」が入力されたとき、1桁目の数字「2」から検索がなされ、更に、2桁目までの数字列「25」について検索がなされ、更に、数字列「256」に応じて、文字数3のブロックのアドレス「3F0F」のテーブルに行き着く。このテーブルの後続数字は「1」であり、文字入力バッファ41に格納されている数字列「25625」の第4番目の数字「2」とは異なるので、NTPに基づき次のテーブルを検索する。ここでは、数字列「256」に続く数字が「1」である候補と、「2」である候補とだけが存在しているため、たちまち、後続数字が「2」のテーブルを検索できている。通常は、後続数字が「1」のテーブルの次は、後続数字が「2」のテーブル、その次は後続数字が「3」のテーブル・・・というようにして、所望の後続数字のテーブルに到達する。

【0100】後続数字が一致すると、このテーブルのNBPに基づき文字数4のブランチ「2562」の第1テーブルに行き着く。このテーブルでは、後続数字が「5」であり、文字入力バッファ41に格納されている数字列「25625」の第5番目の数字「5」と一致する。後続数字が一致すると、このテーブルのNBPに基づき次のブランチ「25625」のテーブルに行き着く。ここでは本来、文字入力バッファ41に格納されている後続数字が無いから、後続数字のエリアに「00」がセットされているテーブルを検索する。この図60の例では、単語辞書14Eにおいても数字列「25625」に続く数字を持つ候補が無いこと、つまりテーブルがないことを前提としており、ブランチ「2562」のテーブルから、直ちに後続数字のエリアに「00」がセットされているアドレス「98AC」のテーブルに行き着いている。

【0101】図60の例では、第1番目の候補文字列に「clock」(コード:63,6c,...)がセットされており、コードポインタ42の出力値「0」に対応して、「clock」のコードが読み出される。以上の処理が、図14におけるステップS25の「検索」からステップS26、S27、S28のループの処理に対

応している。ステップ27におけるコードポインタ42の歩進は、図60におけるテーブルを順次検索するときに対応すると共に、目的のテーブルにおいて、各候補文字を指示して読み出す場合にも対応している。従って、実際的には図60において行われている候補文字の検索は、図55に示した単語辞書14Eを検索している場合と等価である。なお、この例では、「clock」が得られたが、もし、入力された数字列に対応する候補文字が単語辞書14E内に記憶されていなければ、コードポインタ42にNEXT信号を与えてその値を歩進し（S27）、ステップS28からステップS26へのループを繰り返し、最終的に候補文字または候補文字列が検出できないときには、ステップS28においてYESへ分岐する。つまり、コードポインタ42からEND信号が返される。そこで、制御部40は検索結果情報により「該当なし」を中央制御部13へ送出する。「該当なし」を受けた中央制御部13は表示制御部15に「該当なし」の文字フォントを送出し、該当する候補がない旨をLCD表示装置16に表示させる（S29）。

【0102】上記のようにして得られた「clock」のコードは検索結果文字出力バッファ43に出力される（S30）。検索結果情報により結果出力の通知が中央制御部13に与えられ、「clock」のコードは検索結果文字出力バッファ43から中央制御部13に取り込まれ、更に表示制御部17に送られ、図8により説明した通りにして、（LCD）表示装置16における表示に供される。つまり、（LCD）表示装置16には「clock」が表示される。辞書検索部15の制御部40は確定キーの操作または次候補キーの操作を監視している（S31、S32）。確定キーの操作または次候補キーの操作は前述の変換キーの操作の場合と同様にして入力制御部12から中央制御部13へ送出される。

【0103】図59の例では、「clock」が所望の文字であるので、ST4に示すように、確定キーが操作されている。中央制御部13は確定キーのコードを得て、検索スタート信号をインアクティブに遷移させる。辞書検索部15の制御部40はこれを受けてステップ31からYESへ分岐し、上記候補文字を確定させる。なお、単語辞書14Eに「25625」に対応して、「block」、「clock」が順に格納されているときには、図59のST5に括弧にて示されるように、まず、「block」の表示に対して次候補キーが操作され、これによりコードポインタ42にNEXT信号を与えてその値を歩進し（S27）、次候補の「clock」のコードを得てステップS26からS30へと進む。この場合も、「clock」が所望の文字であるので、ST4に示すように、確定キーが操作される。以降の処理は前述と同様に処理が行われることになる。

【0104】以上の通り、この実施の形態に係る文字入力装置は、各キーに複数のアルファベット文字キーが割

り当てられ、かつ、変換／次候補キー、確定キーを備えるので、操作されたキーに割り当てられたアルファベット文字に対応する候補文字または操作された複数のキーに割り当てられたアルファベット文字列の組み合わせから構成される候補文字列を適切に入力して選択することができる。つまり、少ないキーを持つ情報端末には好適である。

【0105】上記の実施の形態では、変換／次候補キーである「*」キーを操作しなければ、表示部102に何等の表示がなされないため、正しいキー操作がなされているのか否か判らず、操作性が必ずしも良くない。そこで、辞書検索部15の制御部40が備える図14のフローチャートに対応するプログラムを図17のフローチャートに対応するプログラムに代える。これにより、「clock」に対応して「25625」とキー入力した場合には、各キーの操作毎に、図61に示されるように、「2」、「25」、・・・、「25625」と操作されたキー対応の数字が増加して表示され、キー入力が受け付けられていること及びその操作が間違いないこと、つまり、「clock」のそれぞれのアルファベット文字が割り当てられている数字キーが操作されていることを確認することができる。変換／次候補キーである「*」キーが操作された場合においては、単語辞書14Eを用いた文字変換が行われ、単語辞書14Eから対応する候補文字のコードが読み出され、これが上記数字列「25625」の表示に代えられて表示される。なお、図61の例では、単語辞書14Eの数字列「25625」に対応するテーブルの第1候補文字列が「clock」となっていたことを示している。

【0106】更に、第3の実施の形態に係る文字入力装置における辞書検索部15の制御部40が備えるテーブルとして、「2」から「0」までに、その対応するキーに割り当てられたアルファベットの内の最初の文字が第1候補として記憶されている場合、つまり、「2」のコードと「a」のコードが、「3」のコードと「d」のコードが、「4」のコードと「g」のコードが、「5」のコードと「j」のコードが、・・・、「0」のコードと「q」のコードが対応付けられたテーブルを有する場合には、図19のプログラムに対応するフローチャートの処理を実行することにより、「clock」に対応して「25625」とキー入力した場合には、各キーの操作毎に、図62に示されるように、「a」、「aj」、・・・、「ajmaj」と、操作されたキー対応の先頭の文字が増加して表示され、キー入力が受け付けられていること及びその操作が間違いないこと、つまり、「clock」のそれぞれのアルファベット文字が割り当てられているキーが操作されていることを確認することができる。変換／次候補キーである「*」キーが操作された場合においては、上記と同様に単語辞書14Eを用いた文字変換が行われ、単語辞書14Eから対応する候補文

字のコードが読み出され、これが上記行文字列「a j m a j」の表示に代えられて表示される。なお、図62の例では、単語辞書14Eの数字列「25625」に対応するテーブルの第1候補文字列が「clock」となっていたことを示している。

【0107】更に、第4の実施の形態に係る文字入力装置における辞書検索部15の制御部40が備える図22のプログラムに対応するフローチャートの処理を実行することにより、「beer」に対応して「2337」とキー入力した場合には、各キーの操作毎に、図63に示されるように、「a」、「be」、「add」、
10
「beer」が表示される。つまり、単語辞書14Eの数字「2」に対応する候補文字のテーブルの第1候補が「a」であり、単語辞書14Eの数字列「23」に対応する候補文字のテーブルの第1候補が「be」であり、単語辞書14Eの数字列「233」に対応する候補文字のテーブルの第1候補が「add」であり、単語辞書14Eの数字列「2337」に対応する候補文字のテーブルの第1候補が「beer」であることにより、変換/次候補キーを何等操作することなく、上記の順で
20
変換された候補文字または候補文字列が表示される。

【0108】更に、第5の実施の形態に係る文字入力装置における辞書検索部15の制御部40が備える図25のプログラムに対応するフローチャートの処理を実行することにより、単語辞書14Eから候補を取り出すときには存在する所定個までの候補を取り出し、選択数字と共に検索結果文字出力バッファ43へ出力する。これにより、「227」のキー操作に応じて表示部102の表示画面には、図64の下方に示すように、「bar」、「cap」、「car」が、選択数字1~3と共に表示
30
される。制御部40は選択数字の入力を待ち、入力された場合には、この候補文字を確定させる。また、選択数字の入力がなければ、次候補キーの操作を検出し、次候補キーが操作されると、コードポインタ42を上記所定候補数分（上記図64の例では、3個分）歩進し、他の候補の検索へと進む。このように複数の候補が存在する場合には、これらを同時表示して選択に供するので、候補文字の確定を迅速に行うことができる効果がある。

【0109】更に、上記英語圏用の装置が第6の実施の形態の構成を採用することにより、図65の下方に示すように、表示制御部17は表示部102の表示画面の透明電極52の位置に、「bar」、「cap」、「car」、「次候補（英語）」を表示する。次候補キーの操作を検出した場合には、表示用ポインタを変更して、コードポインタ42を上記所定候補数分（上記図65の例では、3個分）歩進し、他の候補の検索へと進む。つまり単語辞書14Eの対応するテーブルの候補文字列について候補を表示するためのポインタと単語辞書14Eのテーブル内から候補文字を検索するためのポインタとが共通であるときには、これらを共に3個分進めることに
50

より、存在するときには次の3候補が取り出され、表示される。このように、複数の候補が存在する場合には、これらを同時表示してタッチパネル50により選択可能とするので、候補文字の確定を確実に迅速に行うことができる効果がある。

【0110】上記英語圏用の装置も、入力文字の訂正を行う等のために、図30の構成と同様に図66に示すようにカーソルCを表示させると共に、キーボード11にカーソル移動キー61、62、消去キー63が備えられている。そして、表示制御部17は、文字の入力とカーソル移動キー61、62の操作情報とに基づき、カーソルポインタを図31のフローチャートに示すプログラムにより制御する。そして、異常処理において、入力数字または入力数字列を表示するようにし、ここで訂正を保証する。つまり異常処理では、文字入力バッファ41にセットされている数字列を表示制御部17へ送出する。訂正後に変換/次候補キーが操作されると、図14のフローチャートのステップS23以降の処理を行う。これにより、誤入力の訂正を適切に行うことができる。

【0111】更に、第10の実施の形態において説明した動作についても、図44に示した単語辞書14に対応する属性情報を備える英語版の単語辞書を具備させ、第10の実施の形態と同様の他の構成を備えさせることにより、属性が分かっている単語を入力する場合には、所望の単語等（英単語等）を迅速に得ることができる。つまり、入力された数字または数字列に対応する英単語の候補が複数ある場合に、所望の属性の候補が選択されて出力され、操作者はある程度絞られた候補の中から所望の変換結果に係る単語（英単語等）を得ることができ、効率的である。

【0112】次に、上記英語圏用の文字入力装置において、文の先頭の文字を大文字とする実施の形態を説明する。この文字入力装置が適用された携帯無線電話機では、図67に示されるように、テンキー103Eの下方にスペース（space）キー67と、改行（return）キー68が設けられてキーボード11Aが構成されている。また、テンキー103Eの「1」キーには、ピリオド（「.」）が対応付けられている。キーボード11Aからの入力コードは、キー対応であり、また、単語辞書13Eの候補文字または候補文字列の各文字コードは小文字コードにより構成されている。

【0113】図68には、上記文字入力装置の構成が示されている。この実施の形態においては、図54の構成に対し、中央制御部13Aの構成が異なっている。つまり、中央制御部13Aには、入力されるキー対応のコードの並びに基づき文頭の文字を判別する文頭判別手段132と、与えられる文字コードを大文字の文字コードに変換して出力する大文字変換手段133と、上記文頭判別手段132による判別結果に応じて出力する文字コードを前記大文字変換手段133を介して出力するか又は

そのまま出力するか切り換える切換手段134とを備える。また、中央制御部13Aには、管理手段131が備えられており、管理手段131は入力されるキー対応のコードを受け取り、所定のコードであるときには、これをそのまま或いは変換して蓄積し、所定のコード以外ときには、これを辞書検索部15へ送出して単語辞書14Eを用いた辞書引きによる候補の検索を行わせ、検索結果に係る候補文字又は候補文字列のコードを得る。次に、上記蓄積してあるコードと辞書検索部15による検索結果のコードとを順に並べて、切換手段134及び文頭判別手段132へ送出する。ここにおいて、上記の所定コードとは、スペースキー67、改行キー68及びピリオドが割り当てられた「1」キーの操作によるコードのことである。

【0114】文頭判別手段132は、管理手段131から与えられるコードの並びの中から、上記所定コードの内のスペースコード、改行コードを検出すると、その前方にある最初のコード（所定のコードを除く）がピリオドのコードとなっているか否かを検出する。そして、スペースコード、改行コードの前方にある最初のコード（所定のコードを除く）がピリオドのコードとなっている場合には、切換手段134へ指示を与え、1文字分のコードを大文字変換手段133へ送出させ、ピリオド以外のコードであれば、そのコードをそのまま出力させる。なお、当初、切換手段134は、最初の1文字のコードを大文字変換手段133へ送出させ、その後のコードをそのまま出力させており、文頭判別手段132の指示に応じて、当該1文字のコードを大文字変換手段133へ送出させ、その後コードをそのまま出力させるように働く。また、文頭判別手段132による切換指示のときに、先頭の文字コードが管理手段131から出力されるものとする。

【0115】具体的には、中央制御部13Aはコンピュータにより構成されているものであり、CPUが図69のフローチャートのプログラムに基づき、主メモリの大文字フラグのオンオフを制御し、これに基づきコードの変換を行っているため、これを説明する。装置の電源が投入されると、スタートとなり、主メモリの文字位置レジスタの値nを1にセットし（s201）、大文字フラグをオンとする（s202）。次に、キー入力結果が入力制御手段12から送られてくるのを待ち（s203）、キー入力の検出を行い（s204）、キー入力に応じてカーソルK（図42等）の移動を表示制御部17に指示し（s205）、大文字フラグをオフとする（s206）。以上の結果、最初にキー入力されたときには大文字フラグがセットされているから、当該文字の変換結果に係る文字のコードは大文字のコードとされ、次に入力される文字については、その時に大文字フラグがオフにされているから、その変換結果に係る文字コードはそのまま出力される。

【0116】従って、図73に示されるように、「This is a pen. That is a book.」と結果が得られるように、入力を行ったときには、先頭の「T」が大文字とされ、これに続く「h」が小文字となる。更に、中央制御部13Aはキー入力結果が入力制御手段12から送られてくるのを待ち（s207）、キー入力の検出を行い（s208）、キー入力に応じてカーソルK（図42等）の移動を表示制御部17に指示し（s209）、このカーソルKからn（=1）字前の文字コードがスペースコード又は改行コードであるかを検出する（s210）。ここでは、「T」に続いて「h i s」と入力されるので、カーソルKの1文字前がスペースコードまたは改行コードとなることはなく、ステップs210にてn oへ分岐し、大文字フラグのオフが継続され（s217）、ステップs207からの動作が続けられる。上記の処理が続けられる内に、「T h i s」の「s」の次に、スペースが入力されるから、ステップs210でy e sへ分岐し、文字位置レジスタの値nが1インクリメントされ、「2」とされる（s211）。そして、カーソルKの2字前の文字コードがピリオドのコードであるかが検出される（s212）。上記の例では、「s」のコードでありピリオドではないので、ステップs213へと進み、カーソルKの2字前の文字コードがスペースのコードであるかが検出される（s213）。上記の例では、スペースコードでもない（「s」のコードである。）ので文字位置レジスタの値nを1に戻し（s216）、ステップs217からの動作が行われる。そして、以下同様に処理が進み、「T h a t」の前のスペースが検出されたときには、ステップS210、S211、S212と進み、ここでy e sへ分岐し、文字位置レジスタの値nを1に戻し（s214）、大文字フラグをオンとし（s215）、ステップs207以降の処理を続ける。この結果、「T h a t」の「T」が大文字となる。なお、ステップs213にてy e sへ分岐しステップs211へ戻る経路は、ピリオドの後に複数のスペースが入力された場合に対応する処理である。

【0117】以上のように、大文字フラグのオンオフが制御されるので、この大文字フラグのオンオフに基づき、表示制御部17に対する出力コードの変換が行われ、文の先頭文字が大文字に変換され出力される。上記の文字コードの変換においては、アルファベットの大文字のコードと小文字のコードとが、図70に示されるように20H（Hはヘキサ表示）だけ異なるので、小文字コードから20Hを引けば大文字のコードを得ることができる。

【0118】上記の説明では、図67に示すが如きの複数のアルファベットが割り当てられた複数のキーを備える文字入力装置について説明したが、小文字コードを大文字コードに自動変換する機能はフルキーボードを有するタイプライタ等の文字入力装置に適用可能である。つ

まり、図71に示されるような全てのアルファベット1文字1文字が1つのキーに割り当てられているフルキーボード11Bを採用している文字入力装置では、通常のシフト状態では小文字の入力がなされ、シフトキーを操作しながら所望の文字キーを操作すると、この文字キー対応の大文字の入力を行うことができる。つまり、図73に示されるように、「This is a pen. That is a book.」との出力を得たいときには、図74に示されるように、「T h i s」の「T」の入力のとき、「T h a t」の「T」の入力のとき、それぞれシフトキーを操作しながら「T」の文字キーを操作する必要があり、操作が煩わしい。なお、図73～図76の「_」はスペースキーの入力を示している。

【0119】また、他のフルキーボードでは、「caps」キーが設けられており、大文字と小文字の切換えを行うように構成されている。この種のフルキーボードを用いた場合に、「This is a pen. That is a book.」との出力を得たいときには、図75に示されるように、「T h i s」の「T」の入力の前後において、「T h a t」の「T」の入力の前後において、「caps」キーを操作して入力を行う必要があり、やはり操作が煩わしい。

【0120】そこで、文字入力装置を図72に示す通りに構成する。つまり、図71に示したフルキーボード11Bを採用し、中央制御部13Bにより、小文字のコードを大文字に変更する。入力制御部12は文字キーに対応して文字コード（従って、通常のシフト状態では小文字の文字コード、シフトキーの操作と共に入力を行ったときには、大文字の文字コード）を発生し、管理手段131Bへ送出する。管理手段131Bは、辞書検索部15にコードを送ることなく蓄積し、文頭判別手段132による判別に同期して出力する。実際には、既に示した図69のフローチャートのプログラムにより動作を行い、大文字フラグのオンオフの制御を行い、これに基づき文字コードの変換を行う。これによって、図71に示したフルキーボード11Bを操作するに際しては、図76に示されるように、シフトキーの操作を全く行うことなく、通常のシフト状態で、「T H I S _ I S _ A _ P E N . _ T H A T _ I S _ A _ B O O K . 」と入力すれば自動的に文章の先頭文字が大文字に変換されて出力され、従来のような複雑なキー操作から解放される利点がある。

【0121】

【発明の効果】以上説明したように本発明の請求項1に記載の発明によれば、複数の文字が割り当てられたキーを操作して、文字または文字列を入力でき、少ないキー数に拘らず必要な文字入力が可能である。しかも、辞書検索により候補を得る方式を採用しているため、割り当てられた文字の単なる配列の中から意味のある文字または文字列を選択でき、また、日本語の場合には清音のキーからキー入力できない拗音、濁音、半濁音を含む候補

についても容易に得ることが可能である。

【0122】以上説明したように本発明の請求項2に記載の発明によれば、複数の文字が割り当てられたテンキーを操作して、文字または文字列を入力でき、少ないキー数に拘らず必要な文字入力が可能である。つまり、テンキーを備えた装置であれば、割り当てられた文字の単なる配列の中から意味のある文字または文字列を選択でき、また、日本語の場合には清音のキーからキー入力できない拗音、濁音、半濁音を含む候補についても容易に得ることが可能である。

【0123】以上説明したように本発明の請求項3に記載の発明によれば、キー操作途中において操作されたキー対応の数字やアルファベットが表示され、キー操作が正しく行われているか否かの確認を行うことができる。

【0124】以上説明したように本発明の請求項4に記載の発明によれば、キー操作途中において辞書手段を検索した結果の候補文字または候補文字列の表示がなされ、キー操作が正しく行われているか否かの確認を行うことができる。

【0125】以上説明したように本発明の請求項5に記載の発明によれば、キー操作途中において辞書手段を検索した結果の第1位の候補文字または候補文字列の表示がなされるので、単語等を単位に、キー操作が正しく行われているか否かを交換された第1候補を見て確認することができる。

【0126】以上説明したように本発明の請求項6に記載の発明によれば、複数の候補文字または候補文字列があるときには、これらの候補文字または候補文字列が所定個ずつ表示されるので、適切な候補を迅速に的確に選択できる効果がある。

【0127】以上説明したように本発明の請求項7に記載の発明によれば、表示された候補をタッチパネルにより選択することができ、適切な候補を迅速に的確に選択できる効果がある。

【0128】以上説明したように本発明の請求項8に記載の発明によれば、候補文字または候補文字列が得られないときには、入力文字または入力文字列について変更を行い、再度変換を行うので、検索できなかった候補を検索できる可能性を有する。

【0129】以上説明したように本発明の請求項9に記載の発明によれば、候補文字または候補文字列が得られないときには入力文字列の末尾文字を削除して、入力文字または入力文字列について変更を行い、再度変換を行うので、末尾の文字がつくことにより検索できなかった候補を検索して候補文字または候補文字列を得ることができる。

【0130】以上説明したように本発明の請求項10に記載の発明によれば、キーの操作の際に誤操作となった、入力文字または入力文字列について変更を行い、検索できなかった候補を検索して候補文字または候補文字

列を得ることができる。

【0131】以上説明したように本発明の請求項11に記載の発明によれば、送信相手端末が処理可能な文字コードの範囲で変換がなされ、送信した場合に相手端末において処理が可能となる。

【0132】以上説明したように本発明の請求項12に記載の発明によれば、送信相手端末において処理可能な文字コードの範囲を範囲情報テーブルから得て、送信相手端末が処理可能な文字コードの範囲で変換を行うので、送信した場合に相手端末において処理が可能となる。

【0133】以上説明したように本発明の請求項13に記載の発明によれば、候補文字または候補文字列を求めるに際して、特定された属性情報に該当する候補文字または候補文字列を求めるので、特定された属性と一致する属性を持つ候補文字または候補文字列のみが出力手段にて表示されることになり、無関係な候補文字または候補文字列が除去され、効率的に候補を得ることができる。

【0134】以上説明したように本発明の請求項14に記載の発明によれば、処理中のモードによって入力に係る文字または文字列の属性が特定され、特定された属性と一致する属性を持つ候補文字または候補文字列のみが出力手段にて表示されることになるので、処理モードに応じた属性を持つ候補文字または候補文字列を効率的に得ることができる。

【0135】以上説明したように本発明の請求項15に記載の発明によれば、カーソルの表示位置から入力に係る文字または文字列の属性が特定され、特定された属性と一致する属性を持つ候補文字または候補文字列のみが出力手段にて表示されることになるので、入力に係る位置に応じた属性を持つ候補文字または候補文字列を効率的に得ることができる。

【0136】以上説明したように本発明の請求項16に記載の発明によれば、操作者の属性指示により、その後の入力に係る文字または文字列の属性が特定され、特定された属性と一致する属性を持つ候補文字または候補文字列のみが出力手段にて表示されることになるので、操作者が所望する属性を持つ候補文字または候補文字列を効率的に得ることができる。

【0137】以上説明したように本発明の請求項17に記載の発明によれば、入力した文の文頭が自動的に検出され、この文頭の文字が自動的に大文字とされ、出力されることになるので、英語等の文章入力に好適である。

【0138】以上説明したように本発明の請求項18に記載の発明によれば、複数の文字が割り当てられたキーが操作され、変換／次候補キーが操作されると、入力されたキー対応の文字または入力された複数のキー対応の文字列について、辞書手段を検索して候補文字または候補文字列を求められるときに、この候補文字または候補

文字列による文の文頭が自動的に検出され、この文頭の文字が自動的に大文字とされ、出力されることになるので、辞書検索により英語の文章を得る場合に、文の先頭が大文字となり便利である。

【0139】以上説明したように本発明の請求項19に記載の発明によれば、ピリオドの後に改行またはスペースを入力して、文を開始する英語等の言語においては、文の先頭が大文字となり便利である。

【0140】以上説明したように本発明の請求項20に記載の発明によれば、入力手段の複数のキーには、仮名文字が割り当てられているので、日本語入力に係る文字入力を可能とする。

【0141】以上説明したように本発明の請求項21に記載の発明によれば、入力手段の複数のキーには、アルファベット文字が割り当てられているので、アルファベット入力に係る文字入力を可能とする。

【0142】以上説明したように本発明の請求項22に記載の発明によれば、携帯無線電話機において文字入力が可能となり、文章の蓄積や相手とのメッセージ通信が携帯型無線電話機を用いてできる効果がある。

【図面の簡単な説明】

【図1】本発明の実施の形態に係る文字入力装置が適用された携帯無線電話機の正面図。

【図2】本発明の実施の形態に係る文字入力装置が適用された携帯無線電話機の構成図。

【図3】本発明の第1の実施の形態に係る文字入力装置の構成図。

【図4】図3に示された文字入力装置の要部であるキーマトリックス部分の構成図。

【図5】図3に示された文字入力装置の要部である入力制御部の構成図。

【図6】図3に示された文字入力装置の要部である入力制御部に備えられるメモリテーブルの構成図。

【図7】図3に示された文字入力装置の要部である入力制御部の動作を説明するためのフローチャート。

【図8】図3に示された文字入力装置の要部である表示制御部の構成図。

【図9】図3に示された文字入力装置の要部である辞書検索部の構成図。

【図10】図3に示された文字入力装置の要部である辞書の概略構成図。

【図11】図3に示された文字入力装置の要部である辞書の具体的構成図。

【図12】図3に示された文字入力装置の要部である辞書の具体的構成図。

【図13】図3に示された文字入力装置の要部である辞書の具体的構成図。

【図14】図3に示された文字入力装置の要部である辞書検索部の動作を説明するためのフローチャート。

【図15】本発明の第1の実施の形態に係る文字入力装

置を用いた入力動作を説明するための図。

【図 16】本発明の第 1 の実施の形態に係る文字入力装置を用いた入力動作による辞書検索を説明するための図。

【図 17】本発明の第 2 の実施の形態に係る文字入力装置の要部である辞書検索部の動作を説明するためのフローチャート。

【図 18】本発明の第 2 の実施の形態に係る文字入力装置による表示手順を説明する図。

【図 19】本発明の第 3 の実施の形態に係る文字入力装置の要部である辞書検索部の動作を説明するためのフローチャート。

【図 20】本発明の第 3 の実施の形態に係る文字入力装置による表示手順を説明する図。

【図 21】本発明の第 3 の実施の形態の変形例に係る文字入力装置による表示手順を説明する図。

【図 22】本発明の第 4 の実施の形態に係る文字入力装置の要部である辞書検索部の動作を説明するためのフローチャート。

【図 23】本発明の第 4 の実施の形態に係る文字入力装置による表示手順を説明するための図。

【図 24】本発明の第 4 の実施の形態の変形例に係る文字入力装置による表示手順を説明する図。

【図 25】本発明の第 5 の実施の形態に係る文字入力装置の要部である辞書検索部の動作を説明するためのフローチャート。

【図 26】本発明の第 5 の実施の形態に係る文字入力装置による候補の表示例を示す図。

【図 27】本発明の第 6 の実施の形態に係る文字入力装置の構成図。

【図 28】本発明の第 6 の実施の形態に係る文字入力装置の要部である辞書検索部の動作を説明するためのフローチャート。

【図 29】本発明の第 6 の実施の形態に係る文字入力装置の要部であるタッチパネルの構成及び、そこにおける表示例を示す図。

【図 30】本発明の実施の形態に係る文字入力装置の要部である表示部及びキーボードの要部を示す図。

【図 31】本発明の実施の形態に係る文字入力装置におけるカーソル制御動作を示すフローチャート。

【図 32】本発明の第 7 の実施の形態に係る文字入力装置の構成図。

【図 33】本発明の第 7 の実施の形態に係る文字入力装置の要部である辞書検索部の動作を説明するためのフローチャート。

【図 34】本発明の第 8 の実施の形態に係る文字入力装置の構成図。

【図 35】本発明の第 8 の実施の形態に係る文字入力装置の要部であるエラー補正テーブルの内部を示す図。

【図 36】本発明の第 8 の実施の形態に係る文字入力装

置の要部である辞書検索部の動作を説明するためのフローチャート。

【図 37】本発明の第 8 の実施の形態に係る文字入力装置の要部である辞書検索部の動作を説明するためのフローチャート。

【図 38】本発明の第 9 の実施の形態に係る文字入力装置の構成図。

【図 39】本発明の第 9 の実施の形態に係る文字入力装置の要部であるキャラクタ範囲情報テーブルの内部を示す図。

【図 40】本発明の第 9 の実施の形態に係る文字入力装置のキャラクタ範囲情報取得動作を説明するためのフローチャート。

【図 41】本発明の第 9 の実施の形態に係る文字入力装置の要部である辞書検索部の動作を説明するためのフローチャート。

【図 42】本発明の第 10 の実施の形態に係る文字入力装置が適用された携帯無線電話機の正面図。

【図 43】本発明の第 10 の実施の形態に係る文字入力装置の構成図。

【図 44】本発明の第 10 の実施の形態に係る文字入力装置の単語辞書の構成図。

【図 45】本発明の第 10 の実施の形態に係る文字入力装置において用いられる指示内容メモリの構成図。

【図 46】本発明の第 10 の実施の形態に係る文字入力装置において用いられるカーソル位置メモリの構成図。

【図 47】本発明の第 10 の実施の形態に係る文字入力装置における定型文 1 の入力モード時の表示例を示す図。

【図 48】本発明の第 10 の実施の形態に係る文字入力装置における検索 1 のモード時の表示例を示す図。

【図 49】本発明の第 10 の実施の形態に係る文字入力装置における検索 2 のモード時の表示例を示す図。

【図 50】本発明の第 10 の実施の形態に係る文字入力装置における属性特定動作を説明するためのフローチャート。

【図 51】図 43 に示された文字入力装置の要部である辞書検索部の構成図。

【図 52】本発明の第 10 の実施の形態に係る文字入力装置における候補検索動作を説明するためのフローチャート。

【図 53】本発明の英語圏用の実施の形態に係る文字入力装置が適用された携帯無線電話機の正面図。

【図 54】本発明の英語圏用の実施の形態に係る文字入力装置の構成図。

【図 55】本発明の英語圏用の実施の形態に係る文字入力装置の単語辞書の構成図。

【図 56】本発明の英語圏用の実施の形態に係る文字入力装置に用いられている単語辞書の具体的構成図。

【図 57】本発明の英語圏用の実施の形態に係る文字入

力装置に用いられている単語辞書の具体的構成図。

【図 58】本発明の英語圏用の実施の形態に係る文字入力装置に用いられている単語辞書の具体的構成図。

【図 59】本発明の英語圏用の実施の形態に係る文字入力装置を用いた入力動作を説明するための図。

【図 60】本発明の英語圏用の実施の形態に係る文字入力装置を用いた入力動作による辞書検索を説明するための図。

【図 61】本発明の英語圏用の実施の形態に係る文字入力装置による第 1 の表示手順を説明する図。

【図 62】本発明の英語圏用の実施の形態に係る文字入力装置による第 2 の表示手順を説明する図。

【図 63】本発明の英語圏用の実施の形態に係る文字入力装置による第 3 の表示手順を説明する図。

【図 64】本発明の英語圏用の実施の形態に係る文字入力装置による候補の表示例を示す図。

【図 65】本発明の英語圏用の実施の形態に係る文字入力装置の要部であるタッチパネルの構成及び、そこにおける表示例を示す図。

【図 66】本発明の英語圏用の実施の形態に係る文字入力装置の要部である表示部及びキーボードの要部を示す図。

【図 67】本発明の英語圏用の第 2 の実施の形態に係る文字入力装置が適用された携帯無線電話機の正面図。

【図 68】本発明の英語圏用の第 2 の実施の形態に係る文字入力装置の構成図。

【図 69】本発明の英語圏用の第 2 の実施の形態に係る文字入力装置の動作を説明するためのフローチャート。

【図 70】アルファベット小文字と大文字のコードを示す図。

【図 71】フルキーボードのキー配置を示す図。

【図 72】フルキーボードを用いた本発明の英語圏用の実施の形態に係る文字入力装置の構成図。

【図 73】図 68、図 72 の文字入力装置による入力結果を示す図。

【図 74】従来方式による文字入力操作手順を示す図。

【図 75】他の従来方式による文字入力操作手順を示す図。

【図 76】図 68、図 72 の文字入力装置による文字入力操作手順を示す図。

【図 77】従来例に係る文字入力装置が適用された携帯無線電話機の正面図。

【図 78】従来の文字入力において用いられていた変換表を示す図。

【図 79】図 78 の変換表による文字入力動作を説明するための図。

【図 80】従来の定型文入力において用いられていた変換表を示す図。

【図 81】従来例に係る文字入力装置のテンキー部分を示す図。

【図 82】図 81 のテンキーによる文字入力動作を説明するための図。

【符号の説明】

1	コントローラ	2	入力部
3	送受信部	4	通話回路
5	アンテナ部	6	通話制御部
7	文字入出力部	10	キーマトリックス
10	11, 11A キーボード	12, 12A	入力制御部
	13, 13A, 13B 中央制御部	14, 14E	単語辞書
	15, 15A 辞書検索部	16	(LC D) 表示装置
	17 表示制御部	20	制御部
	21 タイマ	22	メモリ
	テーブル		
	23, 24 (MEM2, MEM1) メモリ	25, 26	
20	ラッチ		
	31 文字フォントメモリ	32	文字フォント展開部
	33 画像メモリ	34	キャラクタ位置メモリ
	40, 40A 制御部	41	文字入力バッファ
	42 コードポイント	43	検索結果文字出力バッファ
	50 タッチパネル	51	透明シート
30	52 透明電極	53	透明対向電極
	55 位置検出手段	60, 60A	変更手段
	61, 62 カーソル移動キー	63	消去キー
	70 エラー補正テーブル	71, 72	(PMEM, KMEM) メモリ
	75 キャラクタ範囲情報テーブル	76	範囲情報取得手段
40	77 指示内容メモリ	78	カーソル位置メモリ
	101 ハンドセット	102, 102A	表示部
	103, 103E テンキー	104	受話器
	104A 受話部	105	送話器
	131, 131B 管理手段	132	文頭判別手段
50			

51

52

133 大文字変換手段
手段

105A, 105B 送話部
手段

134 切換

300 入力

*

*310, 310E 辞書手段

0A 文字変換手段

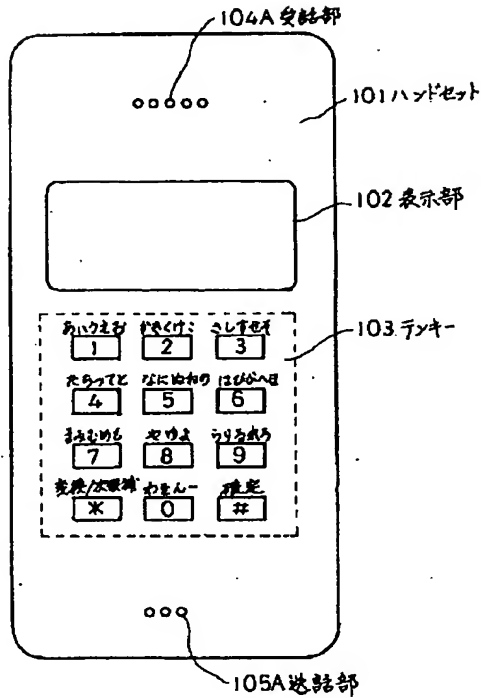
330 出力手段

特定手段

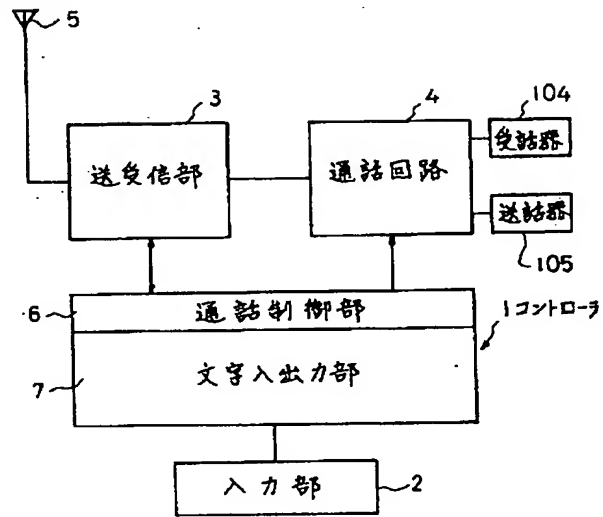
320, 32

350 属性

【図1】

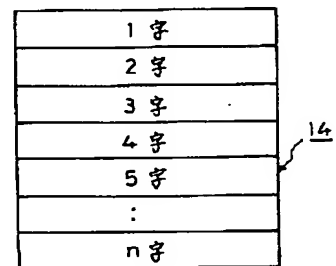
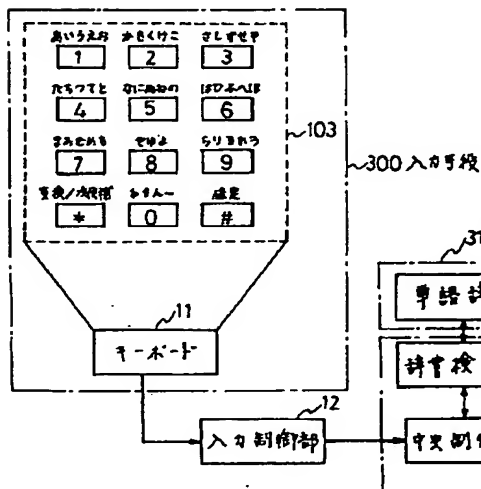


【図2】

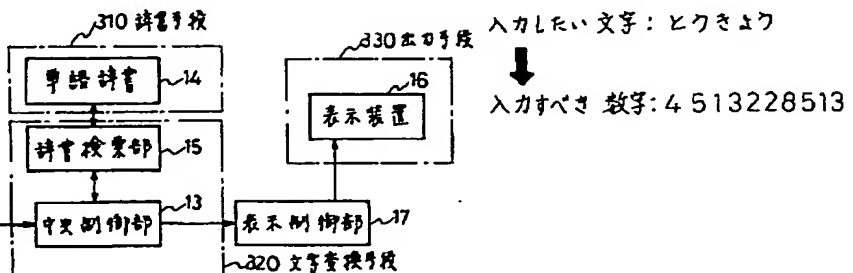


【図56】

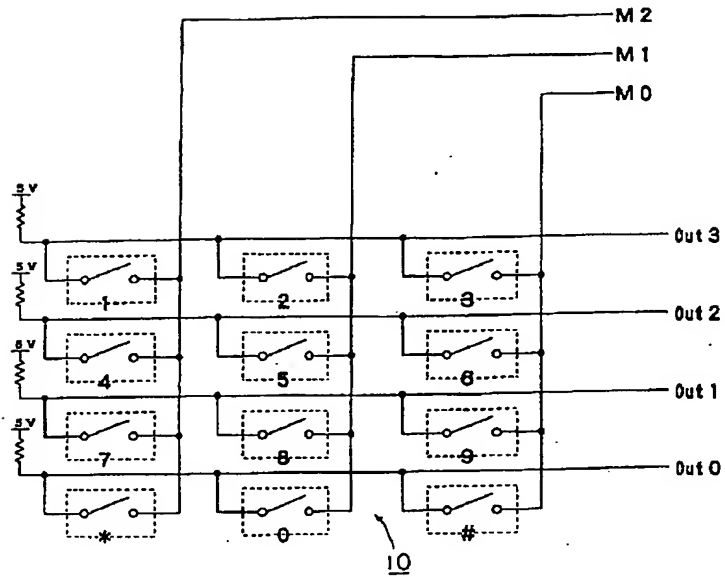
【図3】



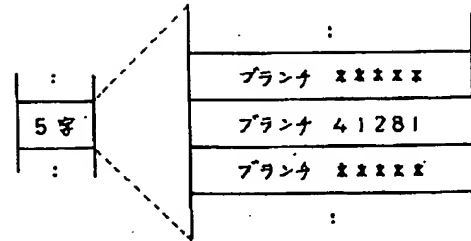
【図79】



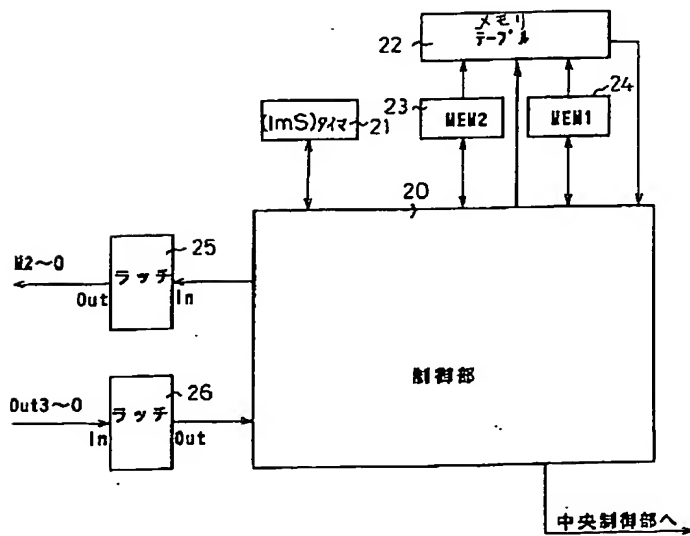
【図4】



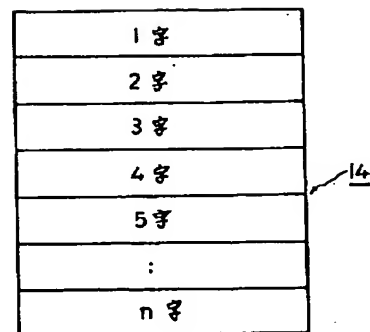
【図12】



【図5】



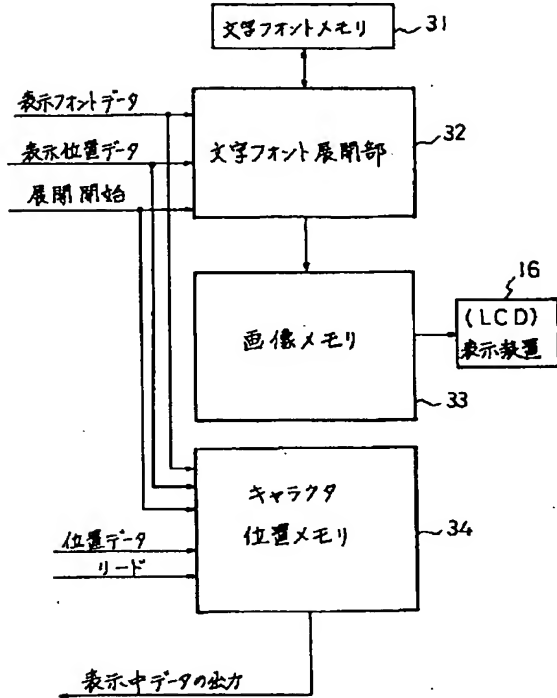
【図11】



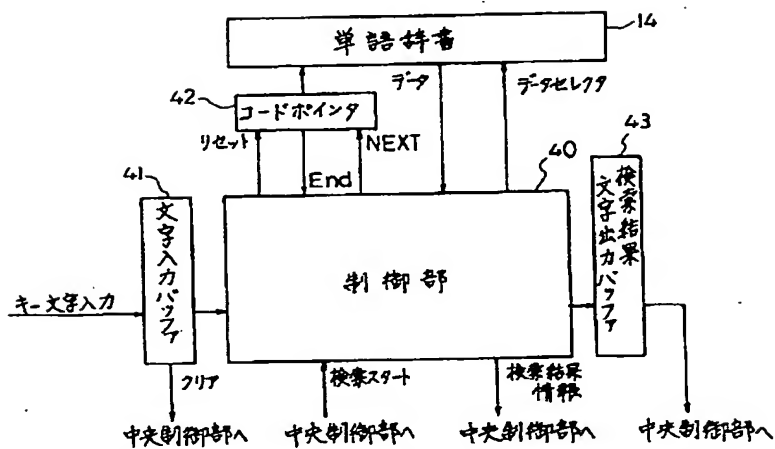
【図6】

MEM1				MEM2			セット値
out 3	out 2	out 1	out 0	2	1	0	
0	1	1	1	"1"	"2"	"3"	セット値
1	0	1	1	"4"	"5"	"6"	
1	1	0	1	"7"	"8"	"9"	
1	1	1	0	"*"	"0"	"#"	
M2				0	1	1	フラグ25 の値
M1				1	0	1	
M0				1	1	0	

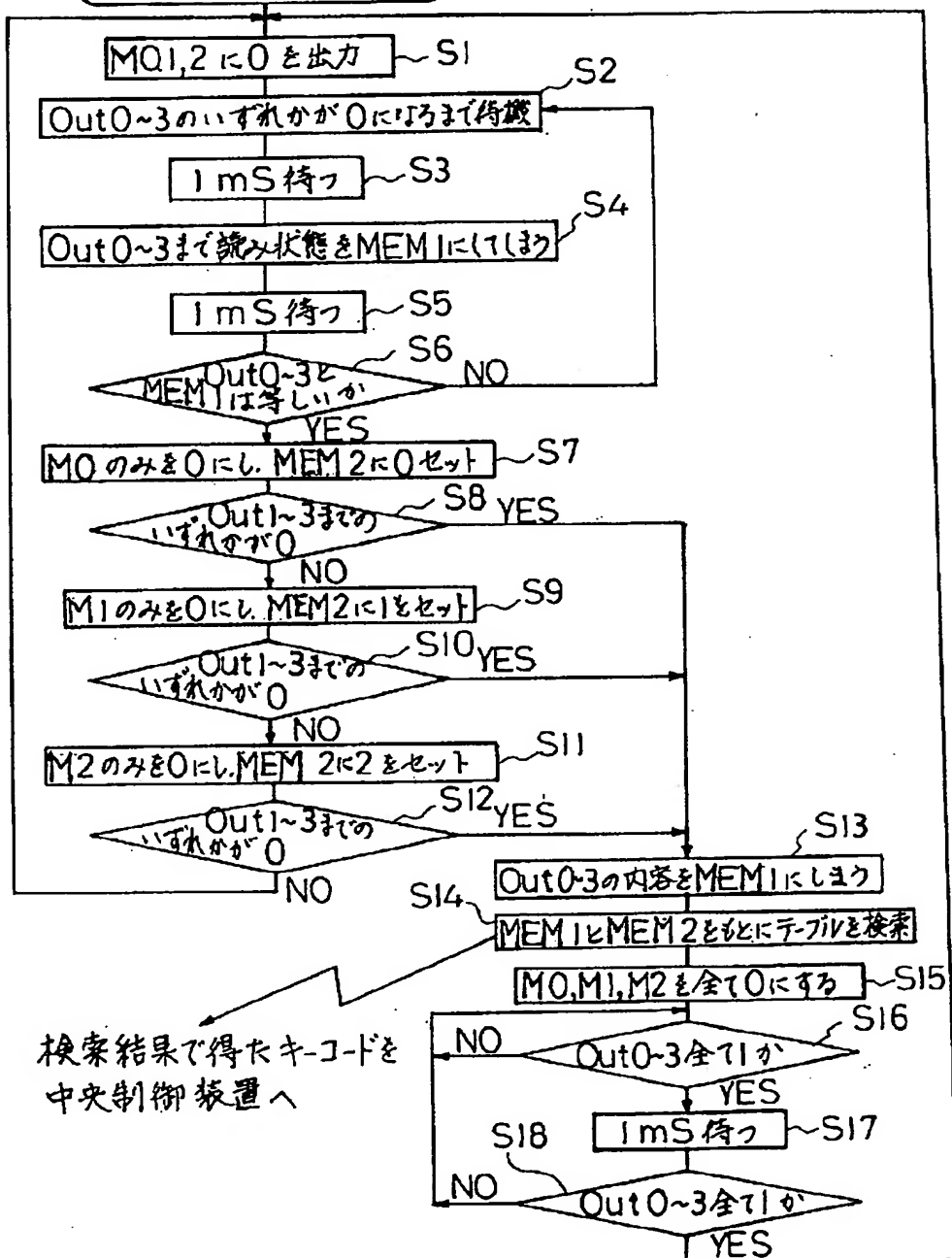
【図8】



【図9】



キー読み込みスタート

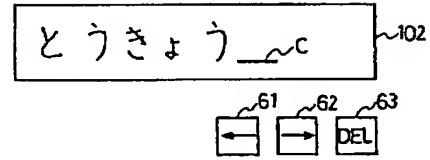


検索結果で得たキ-コードを
中央制御装置へ

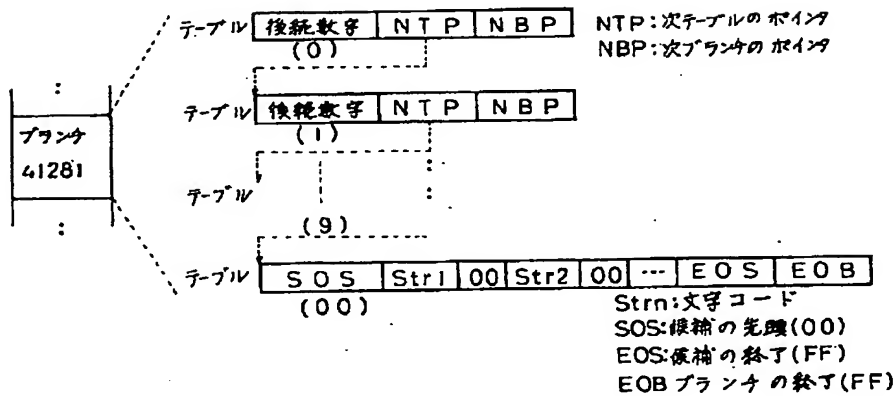
【図10】

コード	かな	漢字	その他の辞書情報
41281	とうきょう	東京	*****
528	なごや	名古屋	*****
2814	きょうと	京都	*****
1132	おおさか	大阪	*****
∩	∩	∩	∩

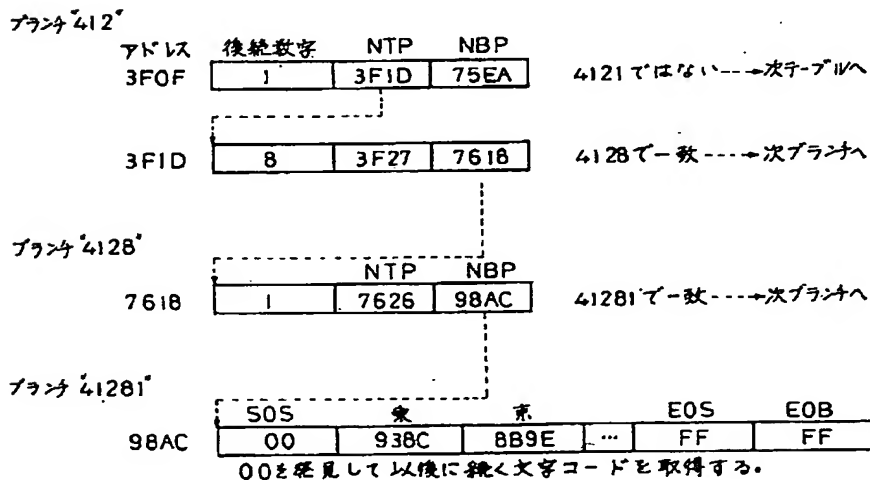
【図30】



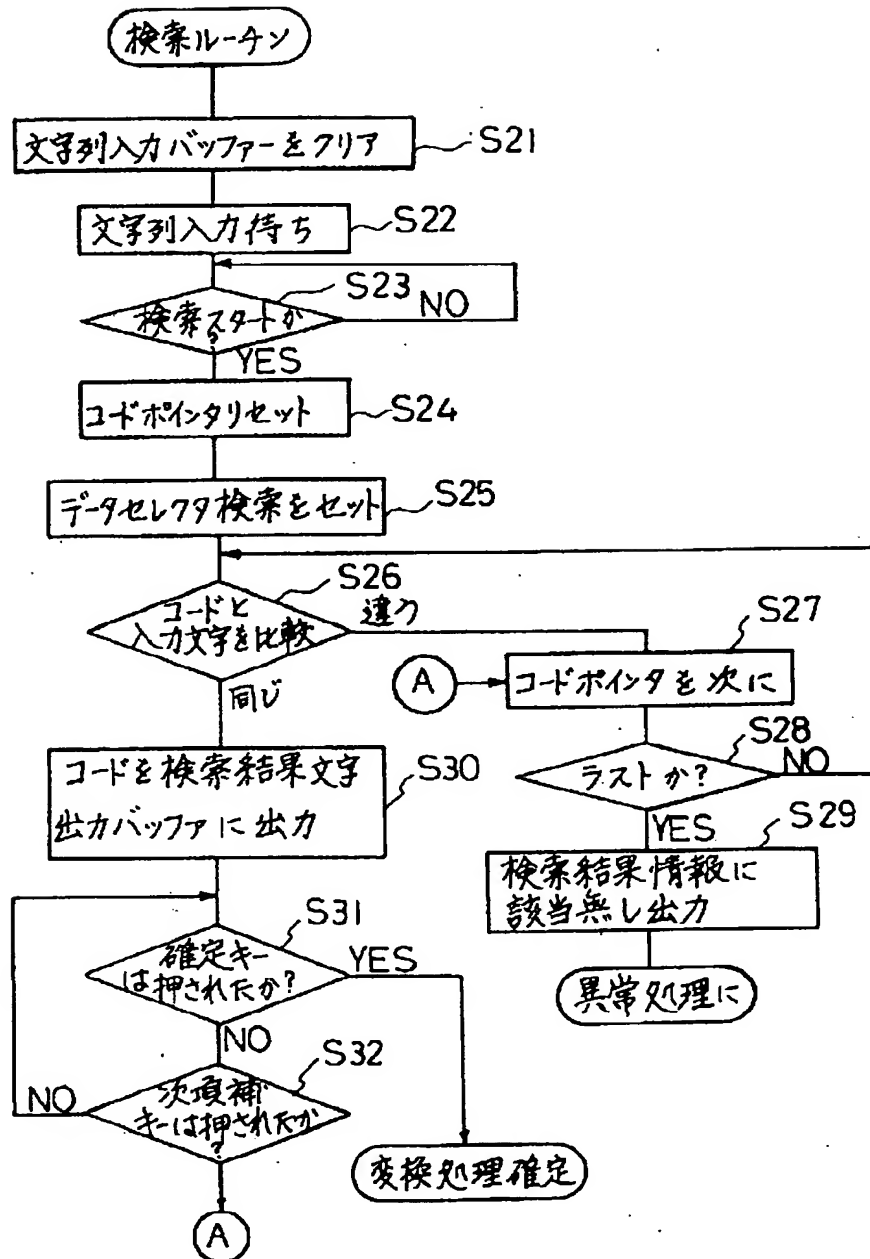
【図13】



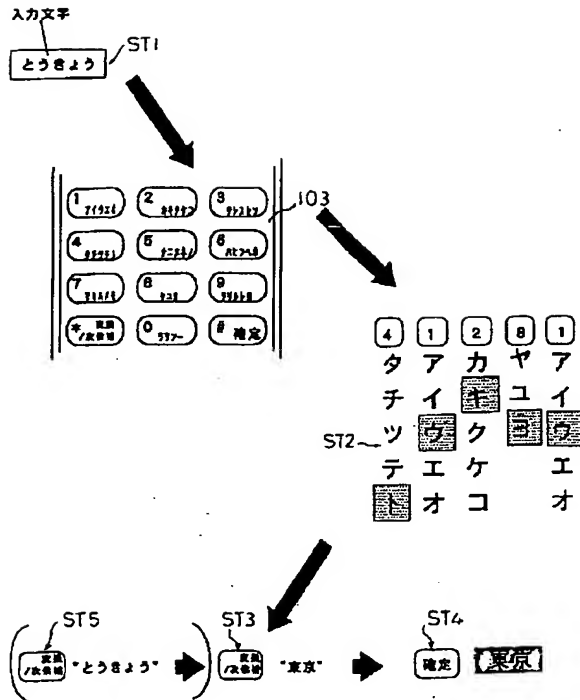
【図16】



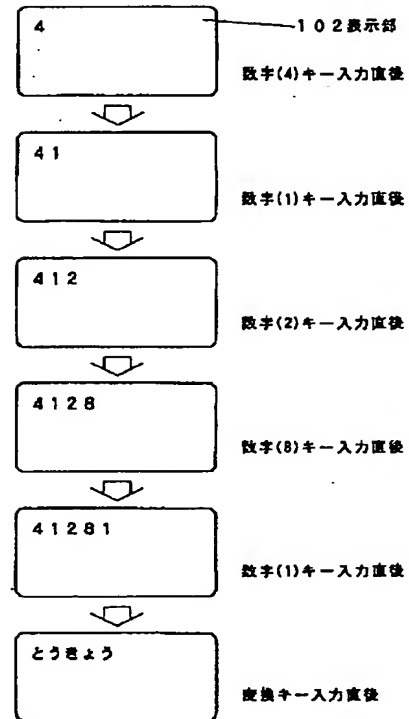
【図14】



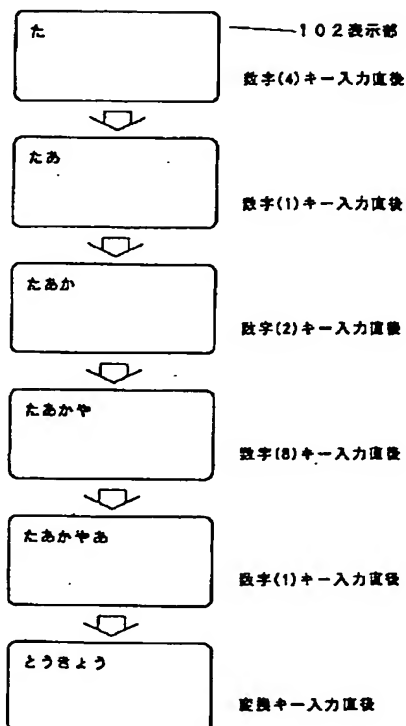
【図15】



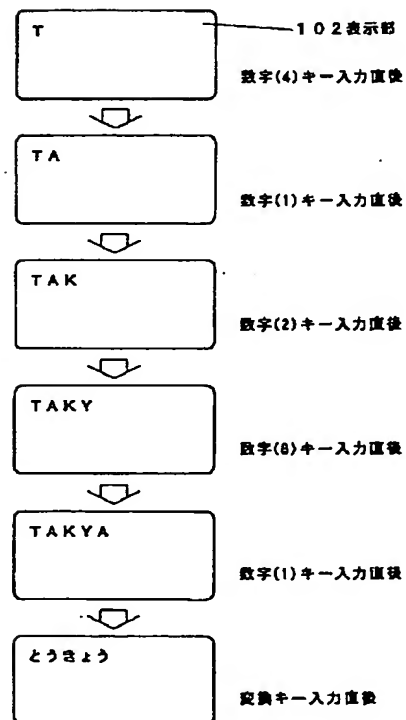
【図18】



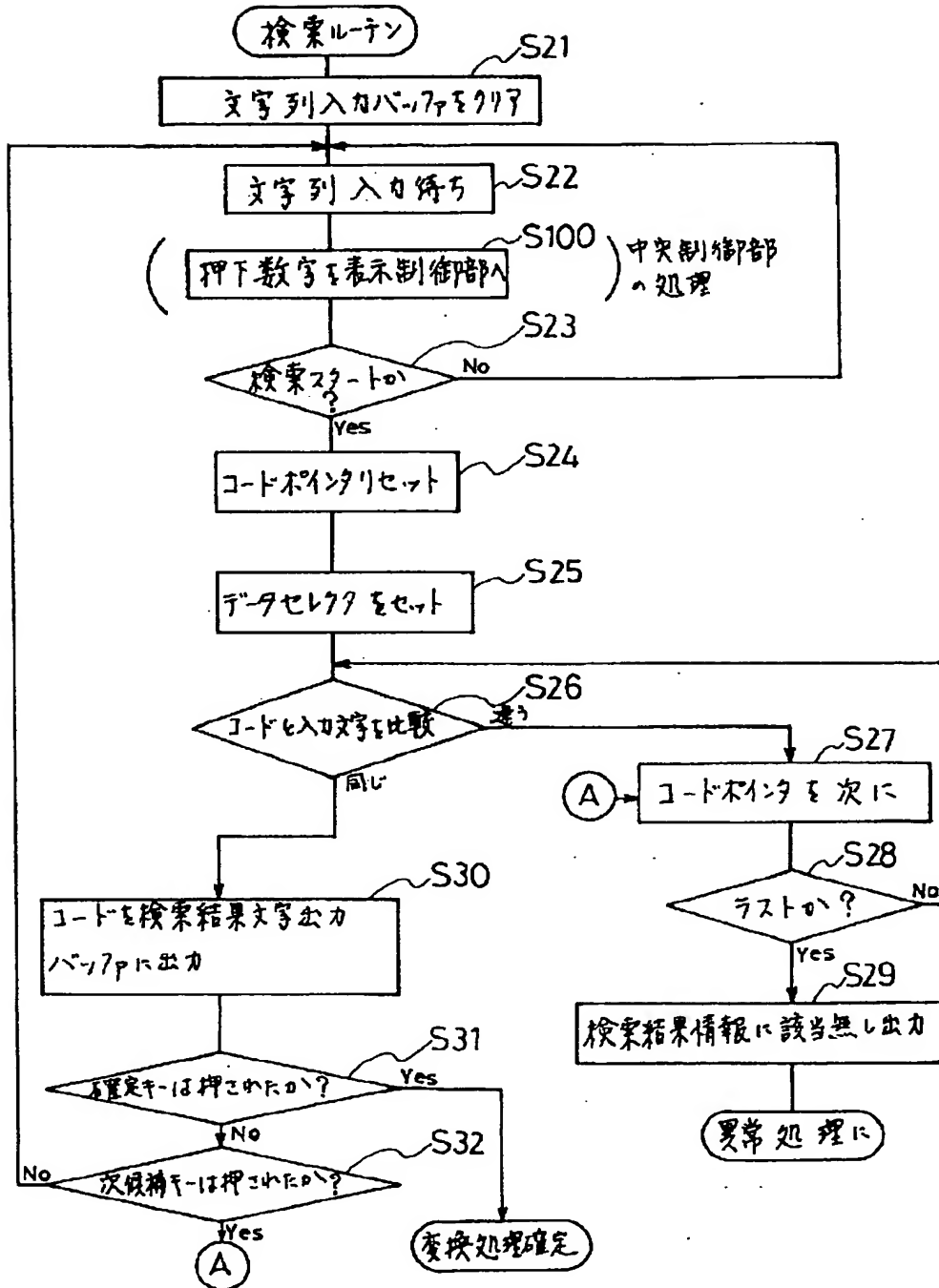
【図20】



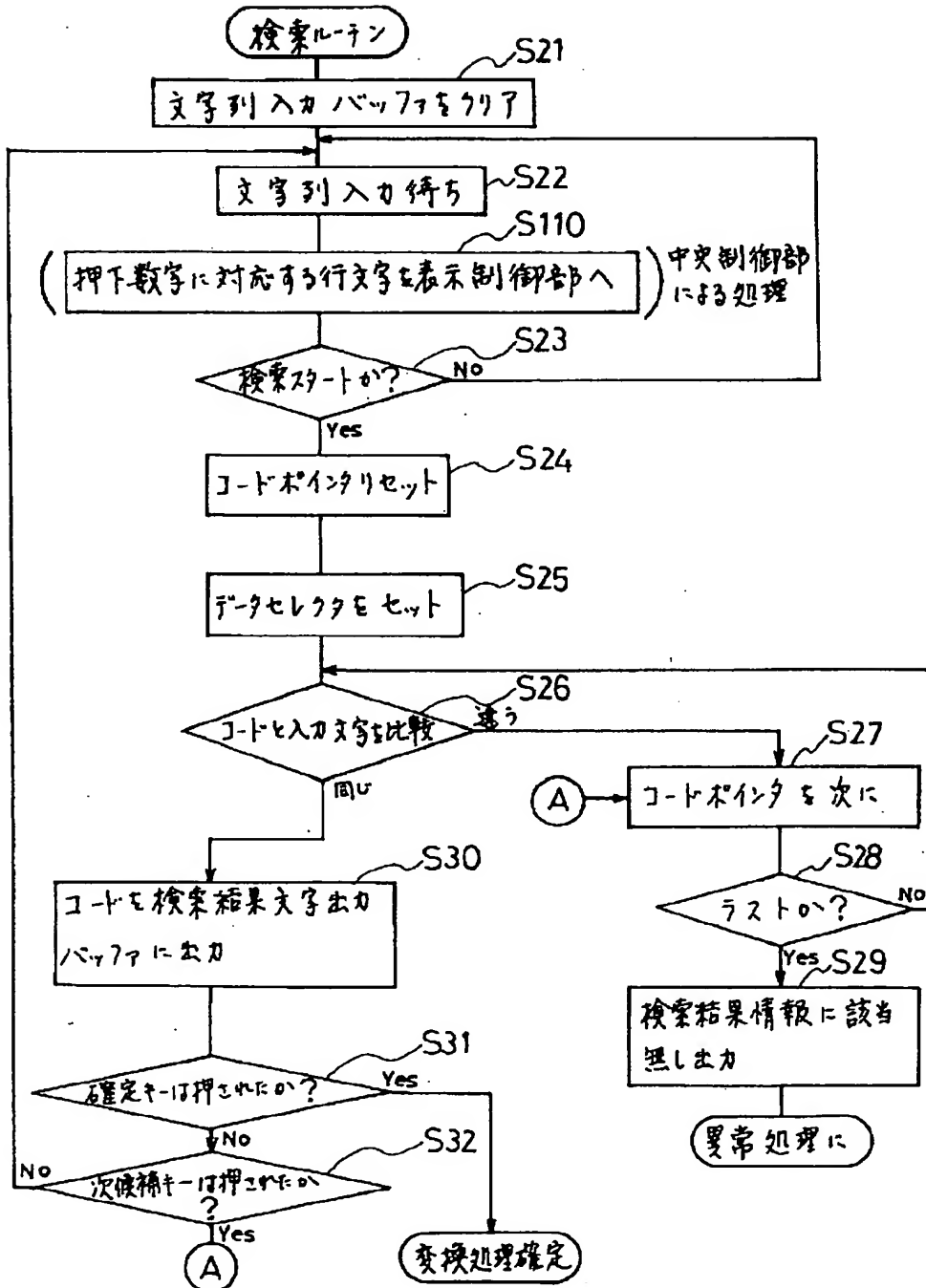
【図21】



【図17】



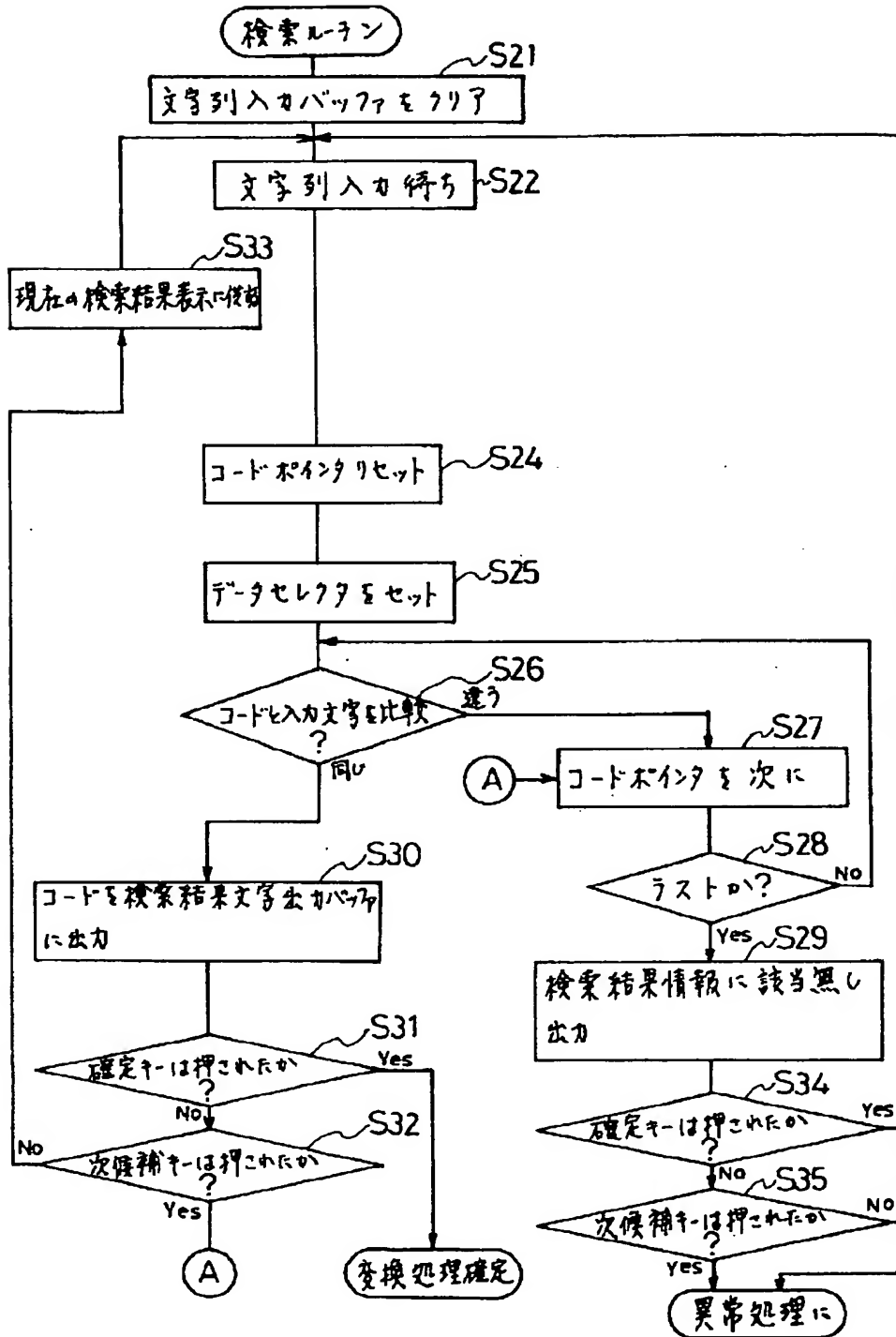
【図19】



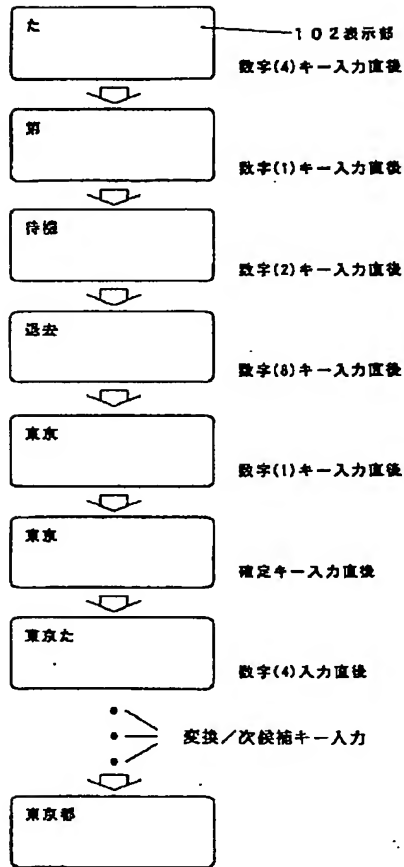
【図73】

This_is_a_pen._That_is_a_book.

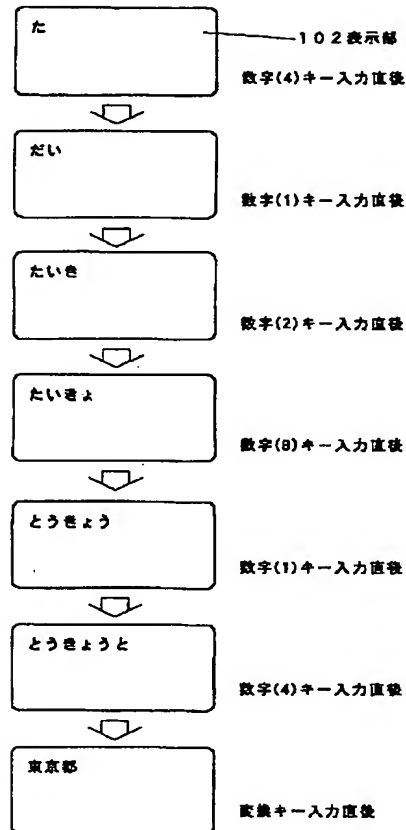
【図22】



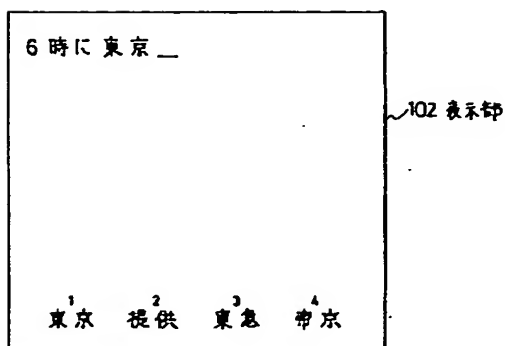
【図23】



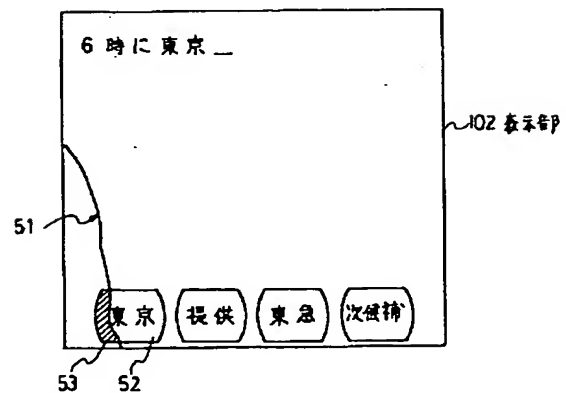
【図24】



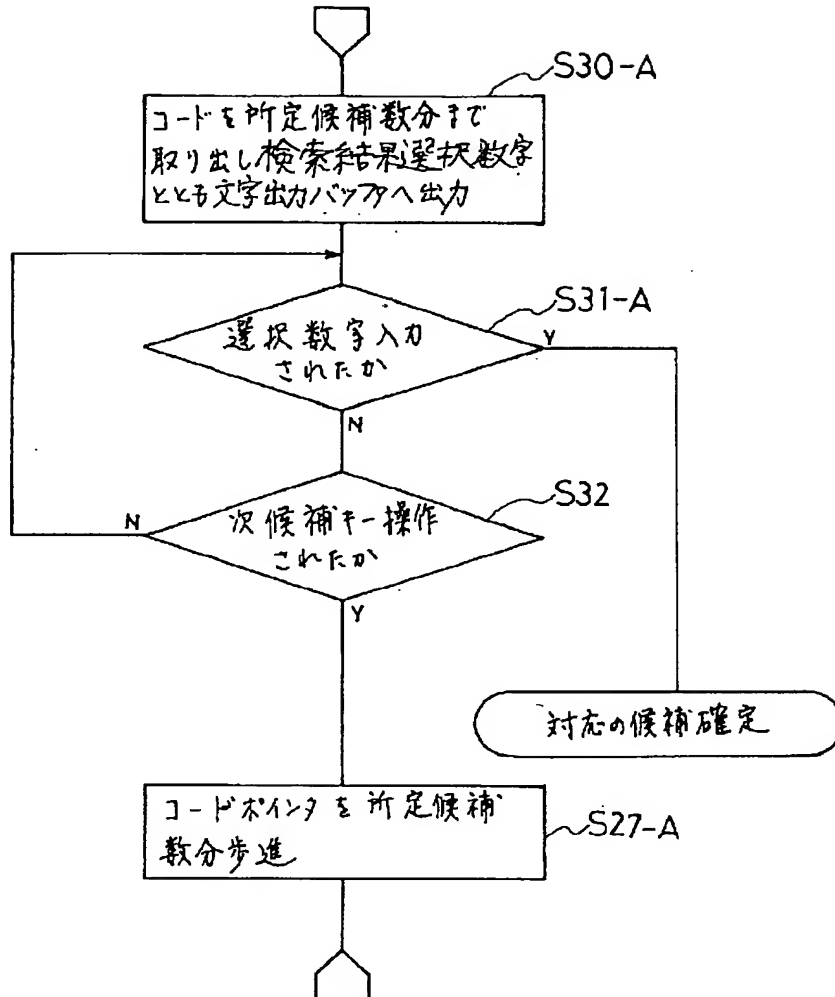
【図26】



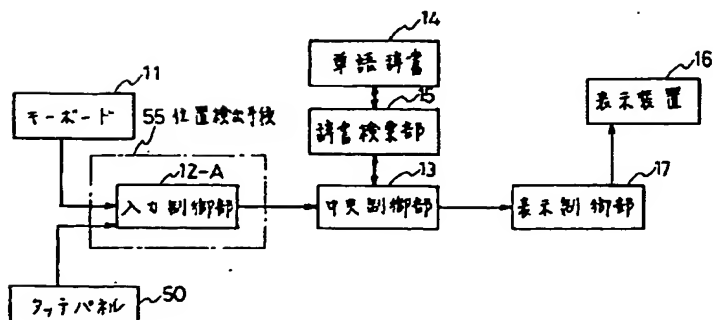
【図29】



【図25】



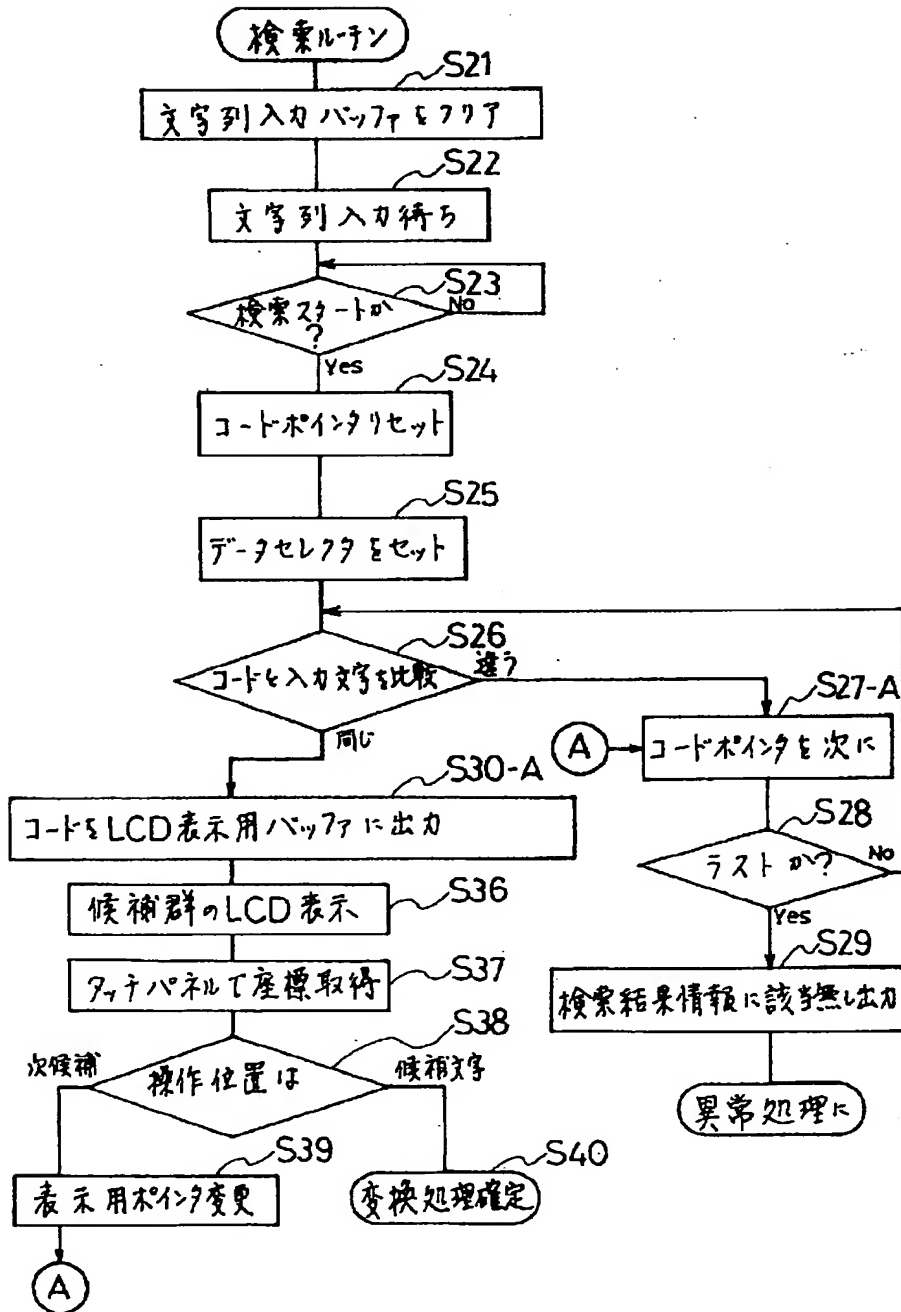
【図27】



【図35】

キーの種類	候補順位(PMEM)			
	1	2	3	4
1	2	4	5	
2	1	5	3	
3	2	6	5	
4	1	5	7	
5	2	6	8	4
6	3	5	9	
7	4	8	5	
8	7	5	9	0
9	6	8	0	
0	8			

【図28】



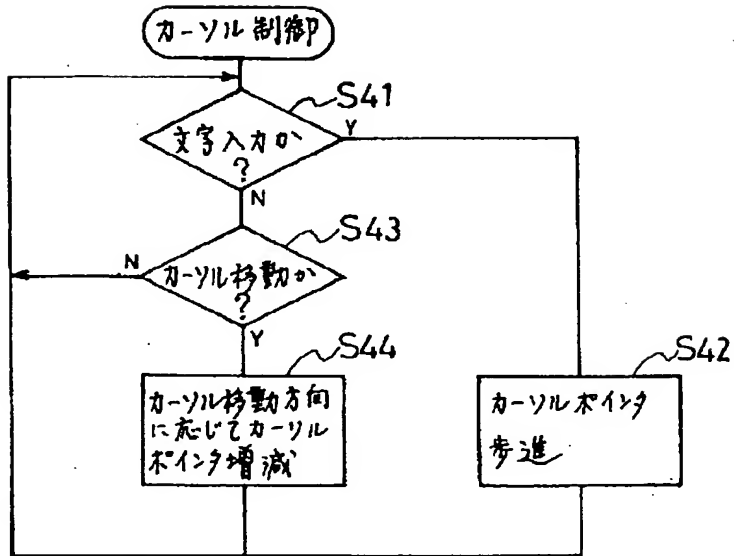
【図74】

shift + THIS IS A PEN. THAT IS A BOOK.

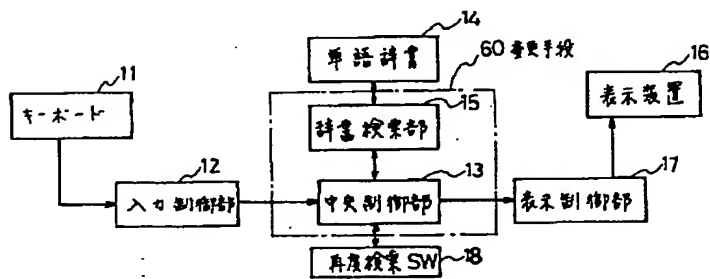
【図75】

caps T caps H T S _ I S _ A _ P E N . _
caps T caps H A T _ I S _ A _ B O O K .

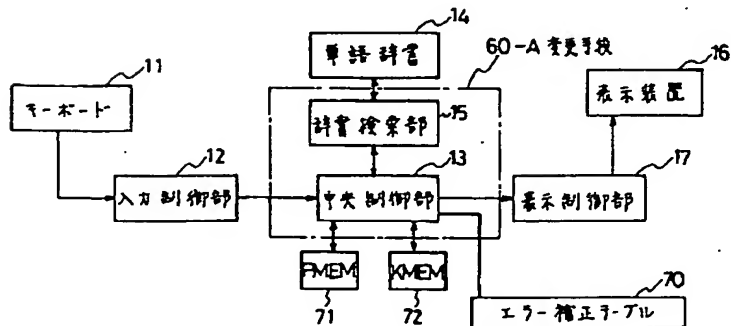
【図31】



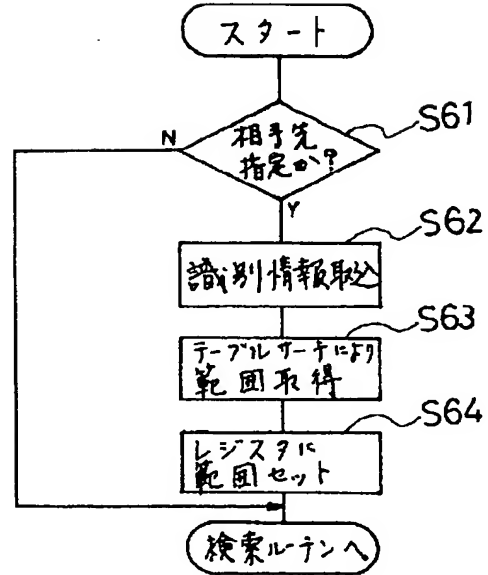
【図32】



【図34】



【図40】



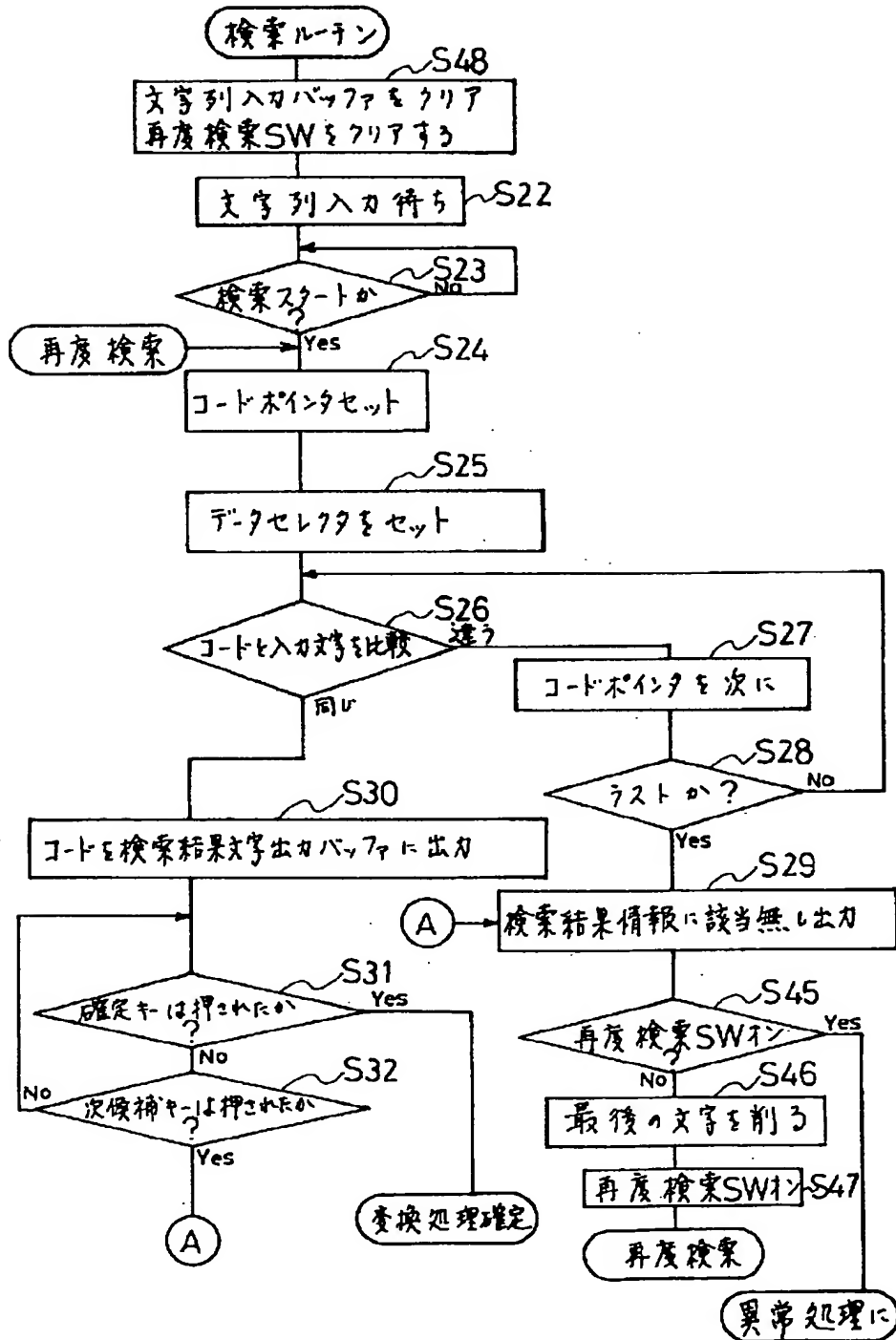
【図39】

宛先識別	範囲情報
AAA	カ7
BBB	漢字
CCC	カナ
...	...
...	...

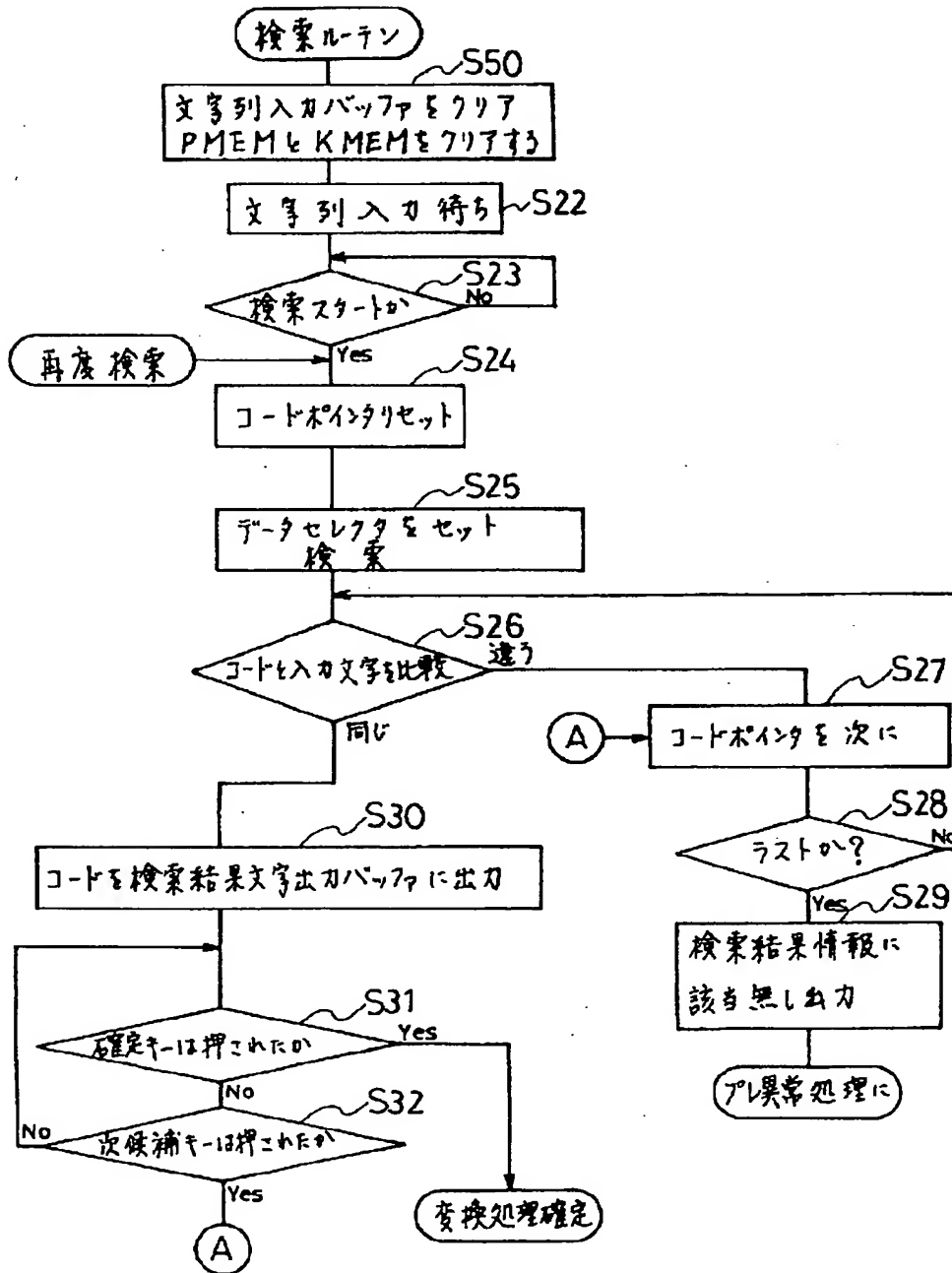
【図45】

モード	属性指示内容
通話	0
データ通信	0
文字入力	キー入力指示
電話番号登録	aaa
定型文1	bbb
検索1	地名
検索2	団体名
検索3	ccc
...	...

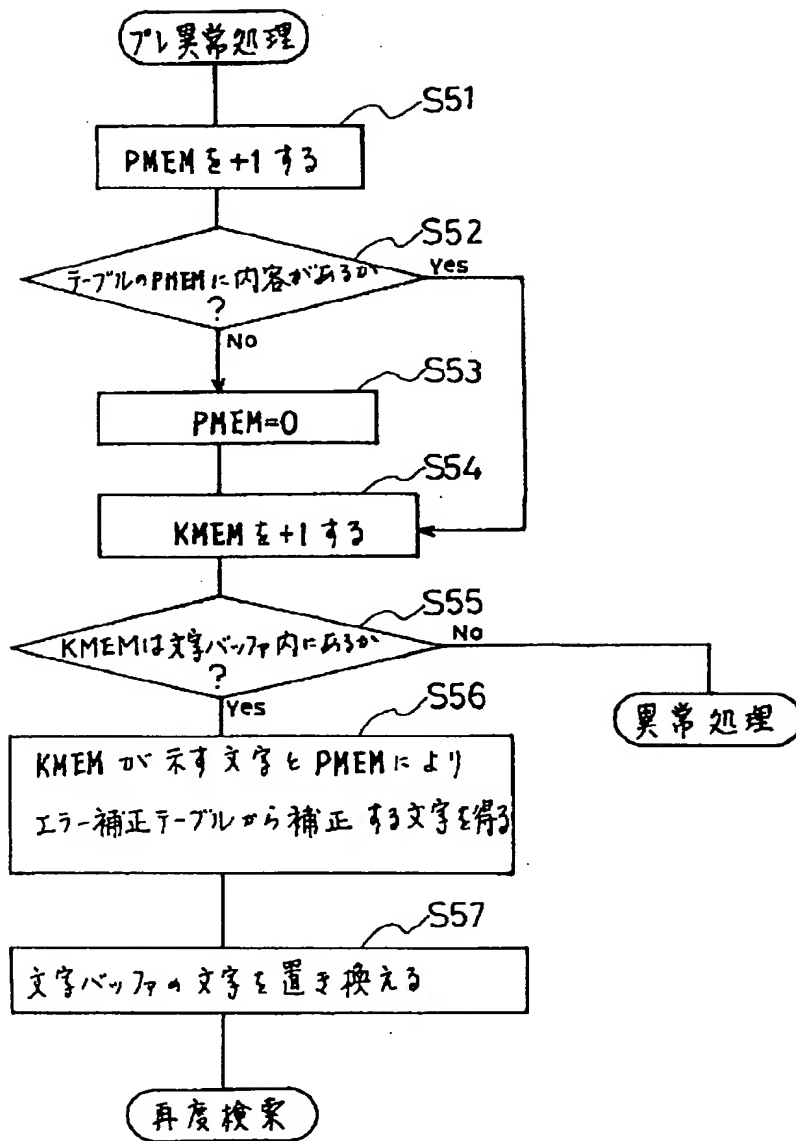
【図33】



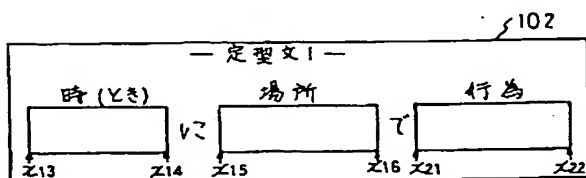
【図36】



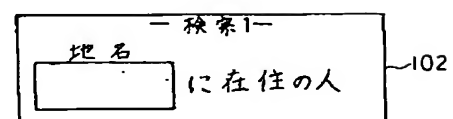
【図37】



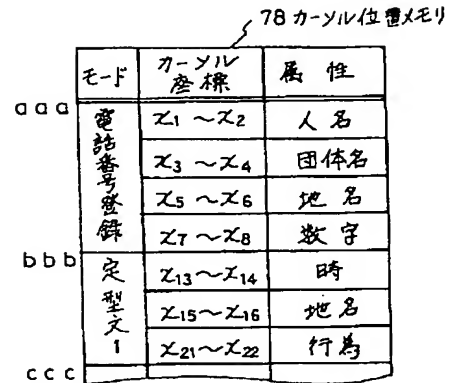
【図47】



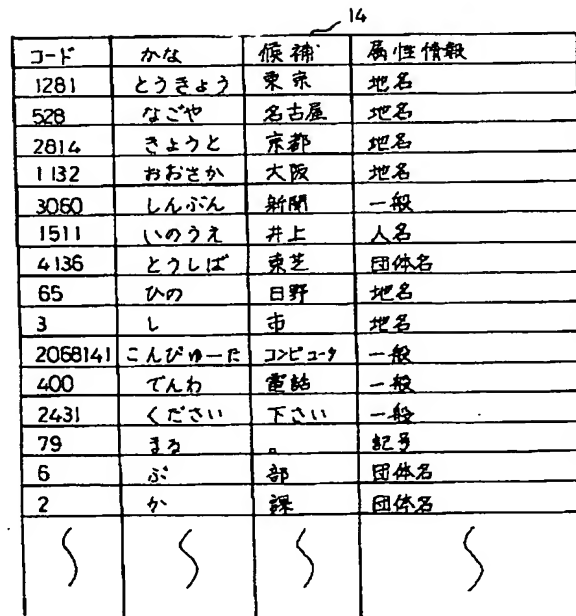
【図48】



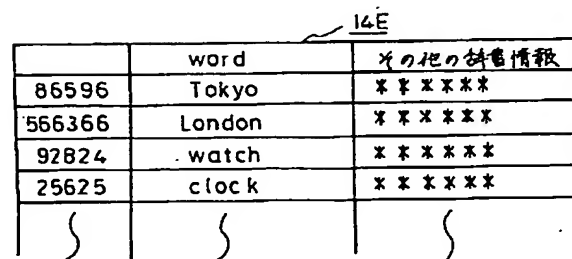
【図 46】



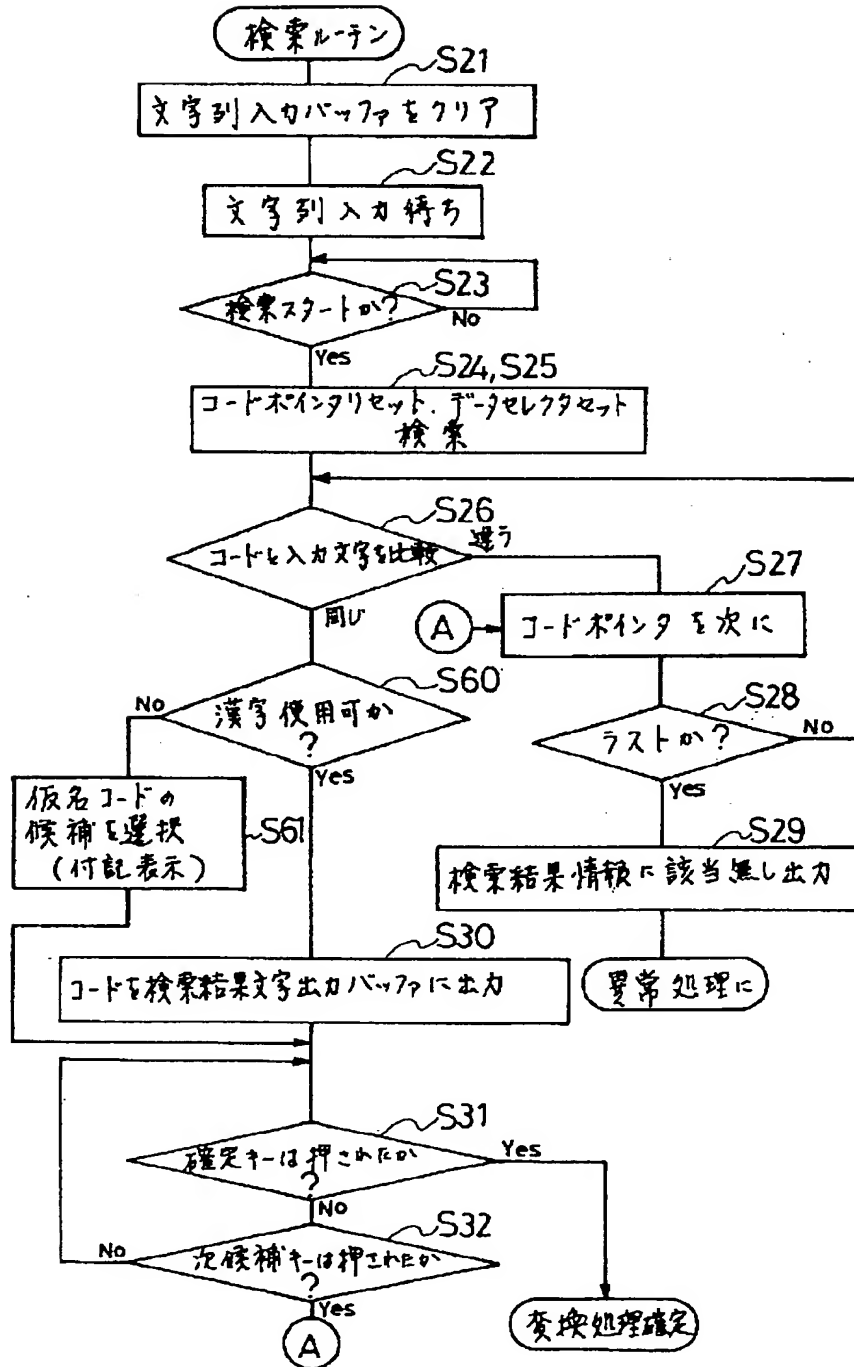
【图 44】



【图 49】



【図41】



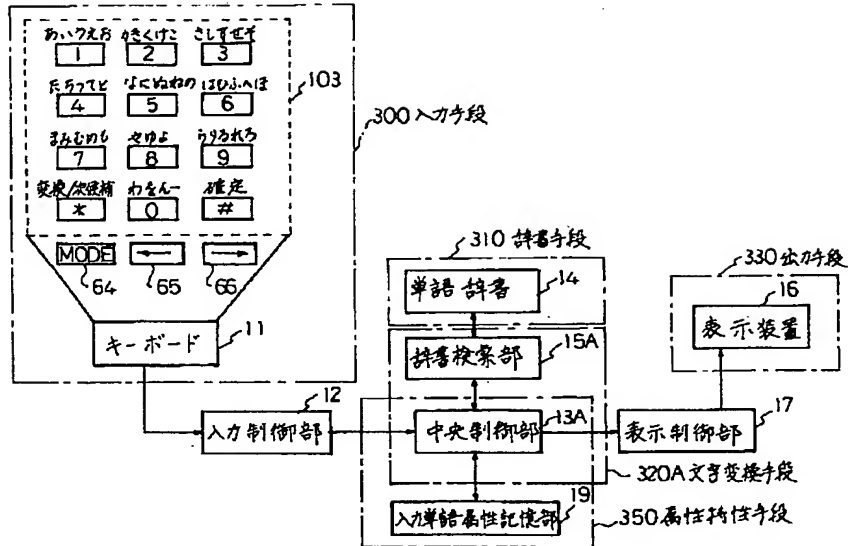
【図70】

上位4ビット→

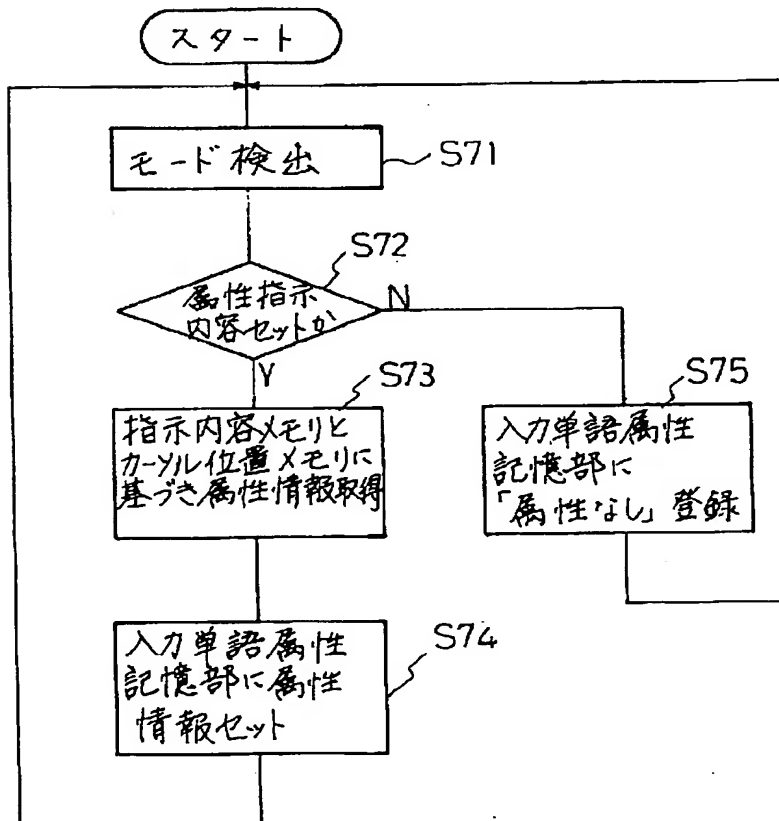
	4	5	6	7
0		P		p
1	A	Q	a	q
2	B	R	b	r
3	C	S	c	s
4	D	T	d	t
5	E	U	e	u
6	F	V	f	v
7	G	W	g	w
8	H	X	h	x
9	I	Y	i	y
A	J	Z	j	z
B	K		k	
C	L		l	
D	M		m	
E	N		n	
F	O		o	

下位4ビット↓

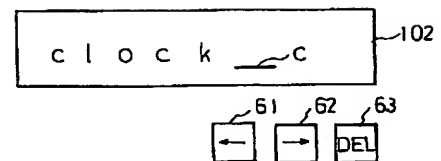
【図 43】



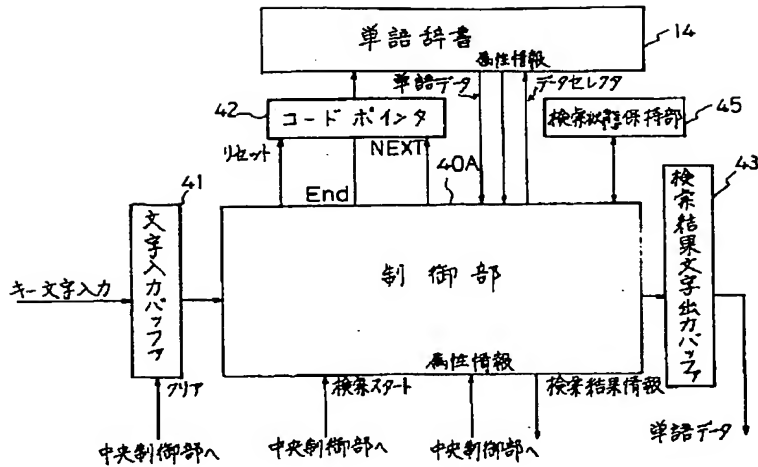
【図 50】



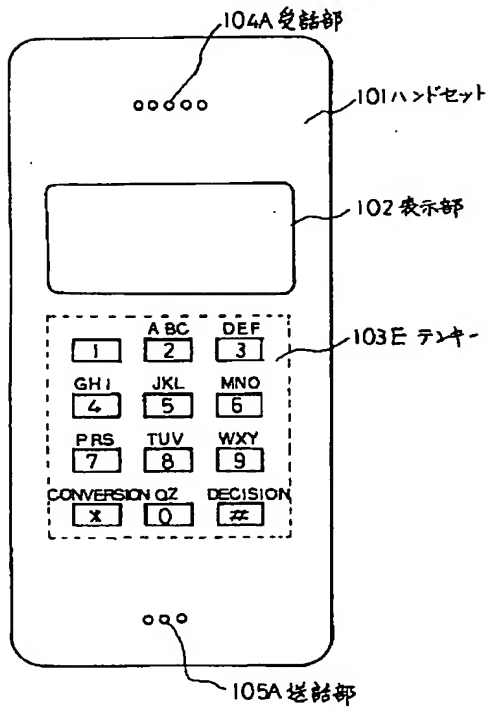
【図 66】



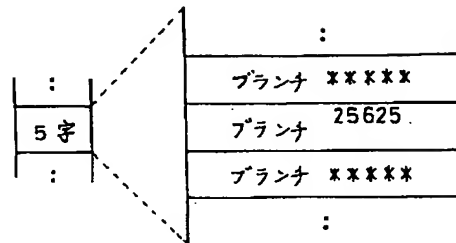
【図51】



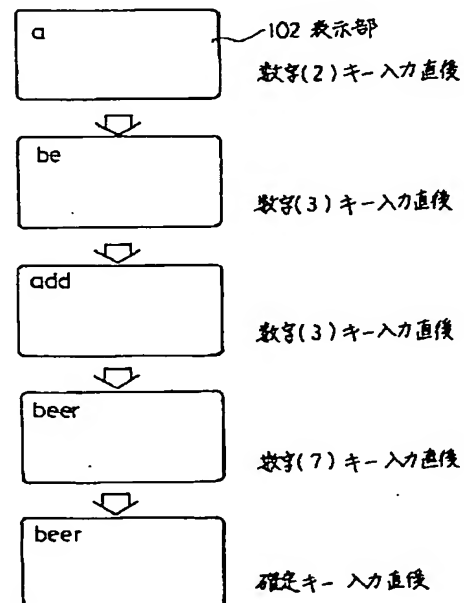
【図53】



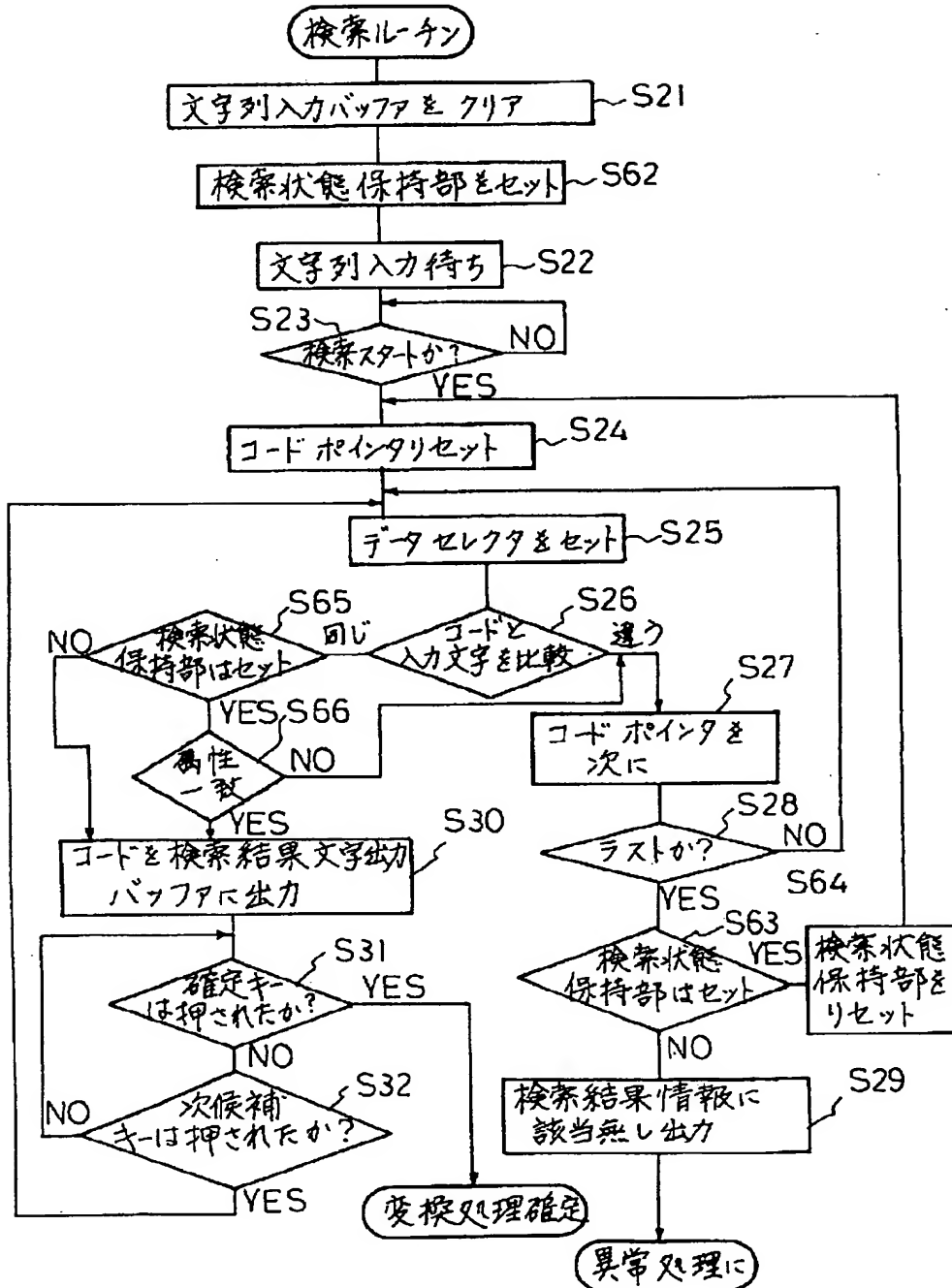
【図57】



【図63】



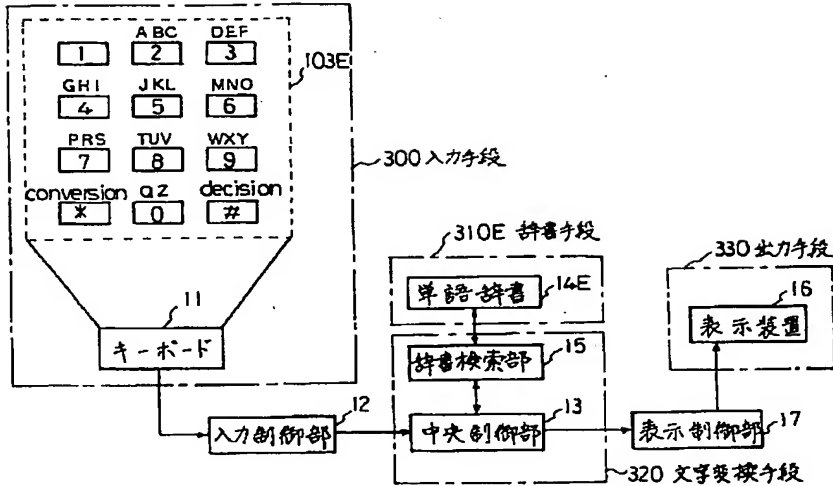
【図52】



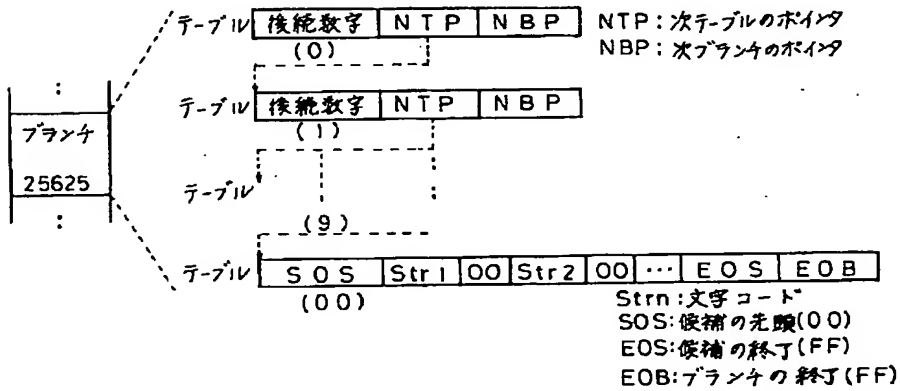
【図76】

THIS IS A PEN THAT
IS A BOOK.

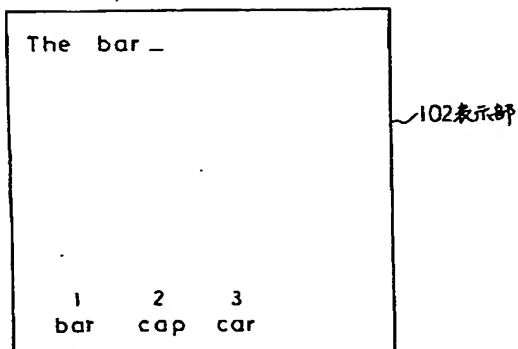
【図 5 4】



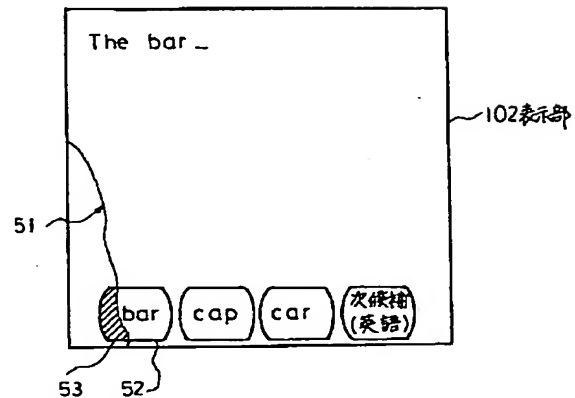
【図 5 8】



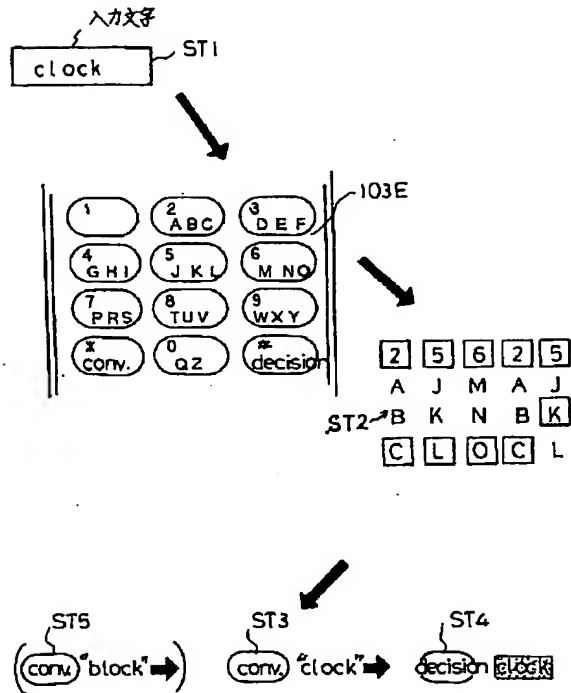
【図 6 4】



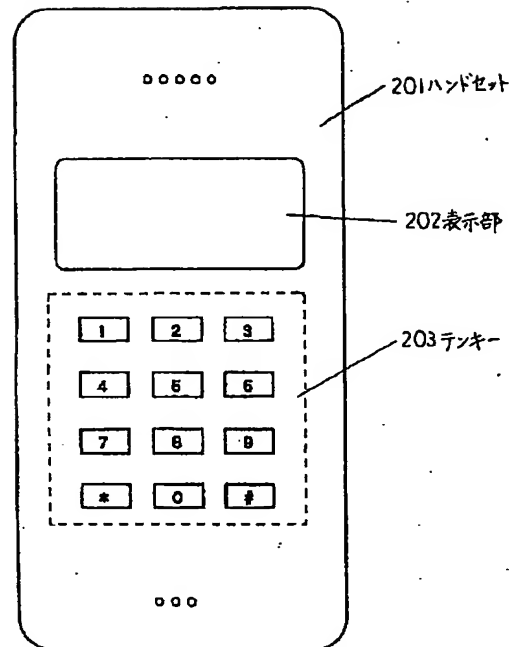
【図 6 5】



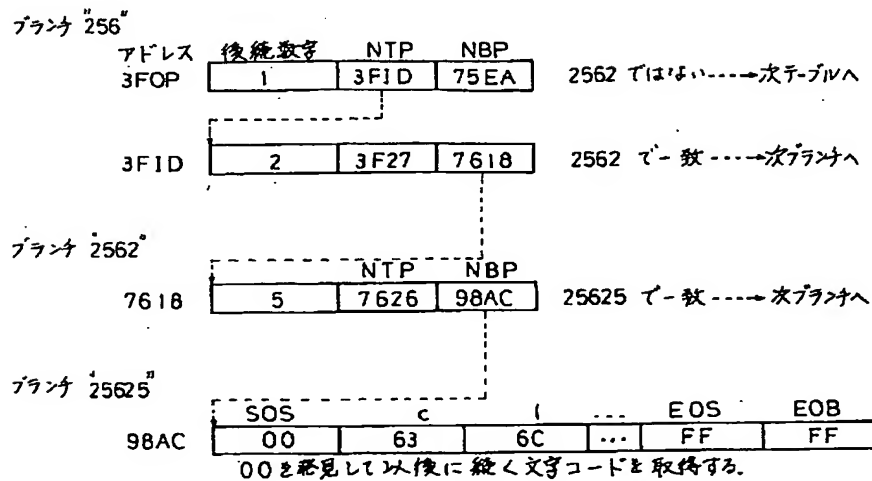
【図59】



【図77】



【図60】



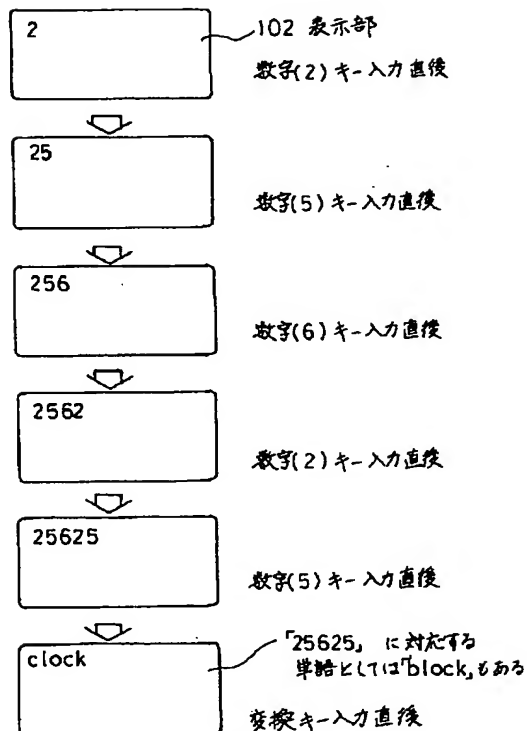
【図82】

入力したい文字: ヒラキよう

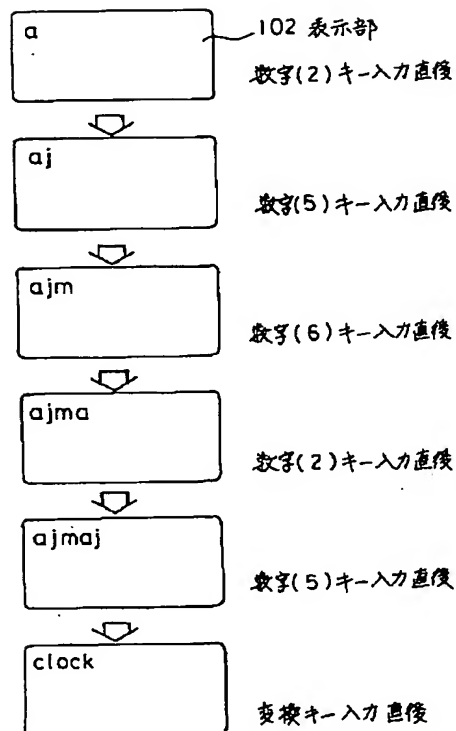


入力すべき文字: 4444411122888111

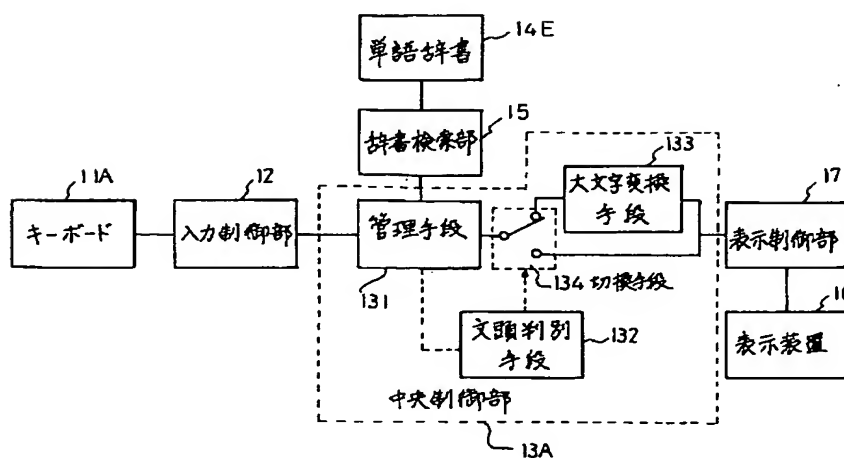
【図 61】



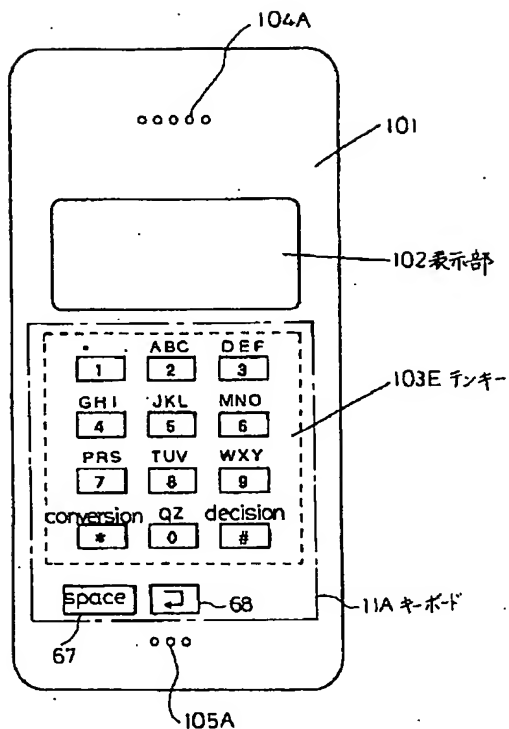
【図 62】



【図 68】



【図 67】



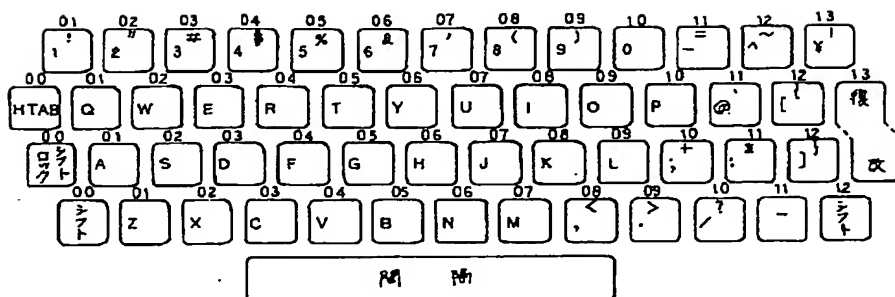
【図 78】

マトリックス文字配列表

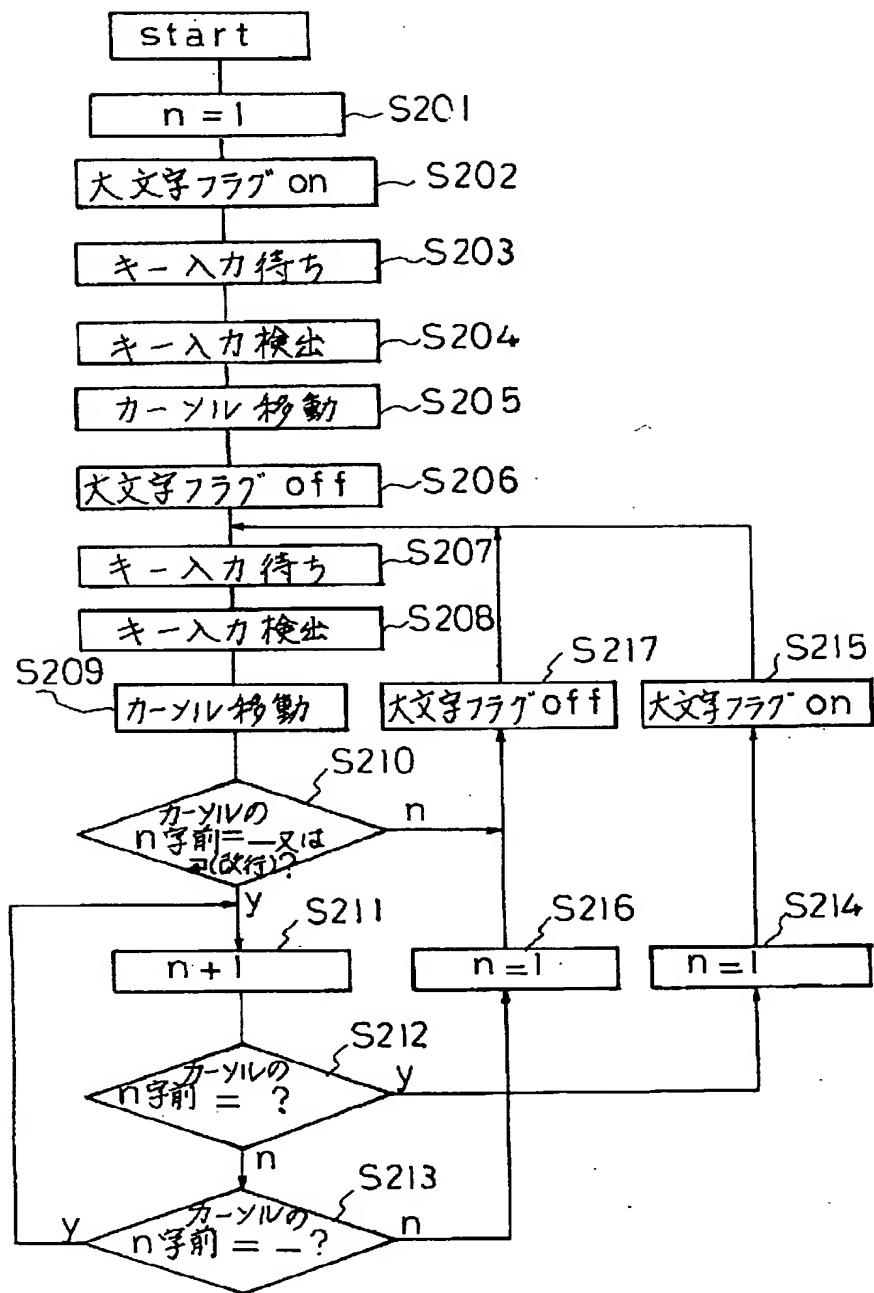
行列	1	2	3	4	5	6	7	8	9	0
1	あ	い	う	え	お	A	B	C	D	E
2	か	き	く	け	こ	F	G	H	I	J
3	さ	し	す	せ	そ	K	L	M	N	O
4	た	ち	つ	て	と	P	Q	R	S	T
5	な	に	ぬ	ね	の	U	V	W	X	Y
6	ほ	ひ	ふ	へ	ほ	Z	:	'	,	.
7	ま	み	む	め	も	*	/	+	-	=
8	や	(ゆ)	よ	#	%	.	%	\$
9	ら	り	る	れ	ろ		?	~	<	>
0	わ	を	ん	.	.	@	♪	早	℃	

【図 71】

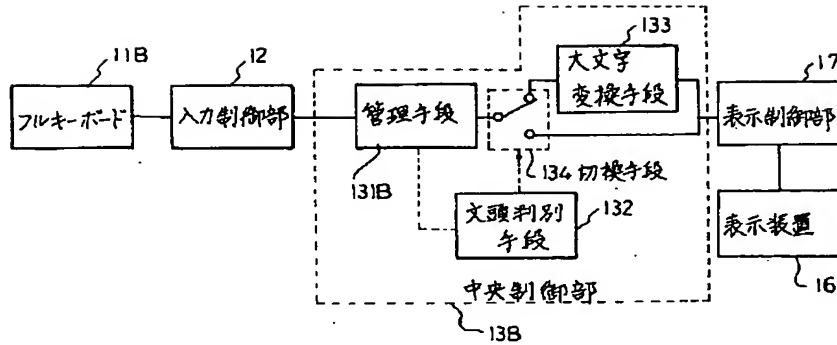
11B



【図69】



【図72】

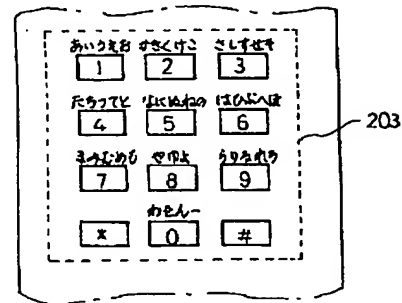


【図80】

定型文のコード表

コード	メッセージの内容
00	ただ今のメッセージは取り消します。
01	会社に電話して下さい。
02	売って下さい。
03	応機にのみます。
04	実行して下さい。
05	状況を報告して下さい。
06	待機して下さい。
07	都合の良いときに連絡して下さい。
08	自宅に電話して下さい。
09	買って下さい。

【図81】



フロントページの続き

(51)Int.Cl.⁶

識別記号

庁内整理番号

F I

技術表示箇所

9288-5L

G 0 6 F 15/20

5 2 0 S

H 0 4 B 7/26

V

(72)発明者 岩城 実

東京都日野市旭が丘3丁目1番地の1 株
式会社東芝日野工場内

(72)発明者 佐々木 勝成

東京都日野市旭が丘3丁目1番地の1 株
式会社東芝日野工場内

(72)発明者 能勢 敏郎

東京都日野市旭が丘3丁目1番地の1 株
式会社東芝日野工場内

(72)発明者 ジョン・ライリー

東京都日野市旭が丘3丁目1番地の1 株
式会社東芝日野工場内

【公報種別】特許法第 17 条の 2 の規定による補正の掲載
 【部門区分】第 6 部門第 3 区分
 【発行日】平成 13 年 2 月 16 日 (2001. 2. 16)

【公開番号】特開平 8-314920
 【公開日】平成 8 年 11 月 29 日 (1996. 11. 29)
 【年通号数】公開特許公報 8-3150
 【出願番号】特願平 8-12494
 【国際特許分類第 7 版】

G06F 17/22
 H04B 1/38
 H04Q 7/32

【F I】

G06F 15/20 502 J
 H04B 1/38
 G06F 15/20 504 Z
 509 Z
 510 C
 520 S
 H04B 7/26 V

【手続補正書】
 【提出日】平成 12 年 2 月 9 日 (2000. 2. 9)
 【手続補正 1】
 【補正対象書類名】明細書
 【補正対象項目名】発明の名称
 【補正方法】変更
 【補正内容】
 【発明の名称】 文字入力端末装置
 【手続補正 2】
 【補正対象書類名】明細書
 【補正対象項目名】特許請求の範囲
 【補正方法】変更
 【補正内容】
 【特許請求の範囲】

【請求項 1】 数字と候補文字とが対応して記憶され
るとともに、数字列と候補文字列とが対応して記憶された
辞書手段と、
複数の文字が割り当てられたテンキーと、文字変換を指
示するための変換キーと、変換結果を確定させるための
確定キーとを含み、文字または文字列を入力するための
入力手段と、
変換結果の候補文字または候補文字列を少なくとも表示
し出力するための出力手段と、
前記入力手段から入力されたテンキーに対応する数字ま
たは入力された複数のキーに対応する数字列について、
前記辞書手段を検索して候補文字または候補文字列を求
め、この候補文字または候補文字列を前記出力手段へ送
出する文字変換手段と、
前記確定キーの操作に基づいて前記求められた候補文字

または候補文字列の中から 1 つを確定する確定手段とを
具備することを特徴とする文字入力端末装置。

【請求項 2】 辞書手段は、数字と候補文字とが対応し
て記憶されるときに、数字列と候補文字列とが対応し
て記憶され、前記数字列の字数は前記候補文字列の字数
以上であることを特徴とする請求項 1 に記載の文字入力
端末装置。

【請求項 3】 文字変換手段は、入力手段の文字が割り
当てられたテンキーが操作されると、辞書手段を検索し
て候補文字または候補文字列を求め、この候補文字また
は候補文字列を出力手段へ送出して表示に供することを
特徴とする請求項 1 に記載の文字入力端末装置。

【請求項 4】 辞書手段には、候補文字または候補文字
列が所定順で記憶され、文字変換手段は、入力手段の
文字が割り当てられたテンキーが操作されると、辞書手
段を検索して第 1 位の候補文字または候補文字列を求
め、この候補文字または候補文字列を出力手段へ送出し
て表示に供し、前記変換キーの操作に基づいて第 2 位以
降の候補文字または候補文字列を求め、この求められた
候補文字または候補文字列を出力手段へ送出して表示に
供することを特徴とする請求項 1 に記載の文字入力端末装
置。

【請求項 5】 文字変換手段は、辞書手段を検索して候
補文字または候補文字列を求め、複数の候補文字または
候補文字列があるときには、これらの候補文字または候
補文字列を所定個ずつ出力手段へ送出して表示に供す
ることを特徴とする請求項 1 に記載の文字入力端末装置。

【請求項 6】 出力手段の候補文字または候補文字列の

表示領域にはタッチパネルが設けられ、このタッチパネルにおける入力操作位置を検出する位置検出手段と、

この位置検出手段の検出結果と候補文字または候補文字列の表示位置との対応関係に基づき、変換結果を確定させる確定手段が備えられていることを特徴とする請求項5に記載の文字入力端末装置。

【請求項7】 数字または数字列と変換結果の候補文字または候補文字列及びその属性情報とが対応付けられて記憶された辞書手段と、

複数の文字が割り当てられたテンキーと、文字変換を指示するための変換キーと、変換結果を確定させるための確定キーとを含み、文字または文字列及び必要な情報を入力するための入力手段と、

変換結果の候補文字または候補文字列を少なくとも表示し出力するための出力手段と、

前記入力手段から入力される情報に基づき、候補文字または候補文字列の属性を特定する属性特定手段と、

前記入力手段から入力されたキーに対応する数字または入力された複数のキーに対応する数字列について、前記辞書手段を検索して候補文字または候補文字列を求めるに際して、前記属性特定手段により特定された属性情報に該当する候補文字または候補文字列を求め、この候補文字または候補文字列を前記出力手段へ送出する文字変換手段と、

前記確定キーの操作に基づいて前記求められた候補文字または候補文字列の中から1つを確定する確定手段とを具備することを特徴とする文字入力端末装置。

【請求項8】 処理に係る複数のモードと属性を得るための指示内容とが対応付けられて記憶された指示内容メモリを備え、

属性特定手段は、処理中のモードを検出し、このモードに対応する指示内容を上記指示内容メモリから得て、該指示内容に基づき入力に係る文字または文字列の属性を得ることを特徴とする請求項7に記載の文字入力端末装置。

【請求項9】 文字または文字列の入力に際して、入力中の文字または文字列の位置を示すカーソルを出力手段に表示するカーソル表示手段と、

このカーソルの位置に対応して入力に係る文字または文字列の属性情報が対応付けられて記憶されたカーソル位置メモリとを備え、

属性特定手段は、上記カーソル表示手段によるカーソルの表示位置及び上記カーソル位置メモリの内容から、入力に係る文字または文字列の属性を得ることを特徴とする請求項7または8に記載の文字入力端末装置。

【請求項10】 属性特定手段は、入力手段から入力されるその後の入力に係る文字または文字列の属性の指示内容に応じて、入力に係る文字または文字列の属性を得ることを特徴とする請求項7乃至9のいずれか1項に記載

の文字入力端末装置。

【請求項11】 求められる候補文字または候補文字列が複数ある場合は、操作者へ通知する文字または文字列を前記変換キーにより選択して通知する手段をさらに備えることを特徴とする請求項1に記載の文字入力端末装置。

【請求項12】 おのおののキーに複数の文字が割り当てられ、数字を入力するための数字キーと、

数字と候補文字とが対応して記憶されるとともに、数字列と候補文字列とが対応して記憶され、前記数字列の文字数は前記候補文字列の文字数以上である辞書手段と、

前記辞書手段に結合され、前記入力された数字または入力された数字列に対応した候補文字または候補文字列を発生する発生手段と、

前記発生された候補文字または候補文字列を表示する表示手段と、

前記表示された候補文字または候補文字列の中から1つを選択する決定手段とを具備することを特徴とする文字入力端末装置。

【手続補正3】

【補正対象書類名】明細書

【補正対象項目名】発明の詳細な説明

【補正方法】変更

【補正内容】

【発明の詳細な説明】

【0001】

【発明の属する技術分野】この発明は、文字入力端末装置に関し、特にキー数に制限がある装置、例えば、携帯情報端末に好適な文字入力端末装置にするものである。

【0002】

【従来の技術】従来、例えば、携帯無線電話機等の携帯情報端末により、様々な文字入力装置が実現されている。まず、図77に示されるように、携帯無線電話機のハンドセット201の表面中央部から下方にかけて4行3列に配置されているテンキー（ダイヤルキー）203を用いるものが知られている。入力手法としては、次の2通りが知られている。

【0003】その第1の手法は、図78に示されるようなマトリックス文字配列表を用いるものである。つまり、数字のペアと1文字（記号）とを対応付けて記憶しておく。そして、上記表を参照して、所望の文字（記号）の行列に対応する数字のペアを入力することにより、1文字（記号）を入力することができる。例えば、「とうきよう（東京）」との入力を得たいときには、図79に示されるように、「4513228513」とテンキーを操作する。これにより、図77に示される携帯無線電話機の表示部202には、数字のペアに対応して「とうきよう」が表示される。

【0004】その第2の手法は、数字コードと定型文とを対応付けて記憶しておき、定型文のコード表を参照し

てテンキー203の操作により、所望の定型文に対応するコードを入力するものである。例えば、定型文の文字コード列が図80のように、2桁のコードに対応して記憶されているとする。この場合、「会社に電話して下さい」を入力したいのであれば、テンキー203の操作により「01」を入力する。これにより、図77の携帯無線電話機の表示部202には、入力されたコードに対応して「会社に電話して下さい」が表示される。

【0005】

【発明が解決しようとする課題】しかし、上記の文字入力装置によると、基本的には変換表がなければキー入力を行うことができず、不便であるという問題点があった。これに対し、図81に示すようにテンキー203のそれぞれに、複数の仮名文字を割り当てた携帯無線電話機等も知られている。この装置においては、各キーにおける操作の回数と文字とが対応付けられて記憶されている。各キーにおいて操作の回数が1であるとき、対応する表記の左端の文字が入力され、以下操作数が1回増加すると、表記の右方向へ1ずつシフトした文字が入力される。例えば、「とうきよう（東京）」との入力を得たいときには、図82に示されるように、「444411122888111」とテンキー203を操作する。これにより、図77の携帯無線電話機の表示部202には、キーの操作回数に対応して「とうきよう」が表示されることになる。

【0006】この文字入力装置によると、上記のように変換表は不要となるが、キー操作数が極めて多くなり、場合によっては、操作回数のカウントを誤って誤入力を起こす問題点があった。また、語呂合わせにより数字を並べて入力することも、例えば、選択呼出受信機等において行われているが、語呂合わせの数字列とその内容に係るメッセージを知っていることが前提であり、一般に使い勝手が悪いという問題点があった。また、語呂合わせでは表現できないメッセージもあり、相手に的確に意思を伝えることができないという問題もあった。

【0007】本発明は上記のような従来の文字入力装置の問題点に鑑みてなされたもので、その目的は、変換表が不要であり、しかも、キー操作数が多くなることなく、必要なメッセージ等の入力が可能な文字入力端末装置を提供することである。

【0008】

【課題を解決するための手段】本発明の請求項1に記載の文字入力端末装置は、数字と候補文字とが対応して記憶されるとともに、数字列と候補文字列とが対応して記憶された辞書手段と、複数の文字が割り当てられたテンキーと、文字変換を指示するための変換キーと、変換結果を確定させるための確定キーとを含み、文字または文字列を入力するための入力手段と、変換結果の候補文字または候補文字列を少なくとも表示し出力するための出力手段と、前記入力手段から入力されたテンキーに対応

する数字または入力された複数のキーに対応する数字列について、前記辞書手段を検索して候補文字または候補文字列を求め、この候補文字または候補文字列を前記出力手段へ送出する文字変換手段と、前記確定キーの操作に基づいて前記求められた候補文字または候補文字列の中から1つを確定する確定手段とを具備することを特徴とする。

【0009】本願の請求項2に記載の文字入力端末装置では、辞書手段は、数字と候補文字とが対応して記憶されるとともに、数字列と候補文字列とが対応して記憶され、前記数字列の字数は前記候補文字列の字数以上であることを特徴とする。

【0010】本願の請求項3に記載の文字入力端末装置では、文字変換手段は、入力手段の文字が割り当てられたテンキーが操作されると、辞書手段を検索して候補文字または候補文字列を求め、この候補文字または候補文字列を出力手段へ送出して表示に供することを特徴とする。

【0011】本願の請求項4に記載の文字入力端末装置では、辞書手段には、候補文字または候補文字列が所定順で記憶され、文字変換手段は、入力手段の文字が割り当てられたテンキーが操作されると、辞書手段を検索して第1位の候補文字または候補文字列を求め、この候補文字または候補文字列を出力手段へ送出して表示に供し、前記変換キーの操作に基づいて第2位以降の候補文字または候補文字列を求め、この求められた候補文字または候補文字列を出力手段へ送出して表示に供することを特徴とする。

【0012】本願の請求項5に記載の文字入力端末装置では、文字変換手段は、辞書手段を検索して候補文字または候補文字列を求め、複数の候補文字または候補文字列があるときには、これらの候補文字または候補文字列を所定個ずつ出力手段へ送出して表示に供することを特徴とする。

【0013】本願の請求項6に記載の文字入力端末装置では、出力手段の候補文字または候補文字列の表示領域にはタッチパネルが設けられ、このタッチパネルにおける入力操作位置を検出する位置検出手段と、この位置検出手段の検出結果と候補文字または候補文字列の表示位置との対応関係に基づき、変換結果を確定させる確定手段が備えられていることを特徴とする。

【0014】本願の請求項7に記載の文字入力端末装置には、数字または数字列と変換結果の候補文字または候補文字列及びその属性情報とが対応付けられて記憶された辞書手段と、複数の文字が割り当てられたテンキーと、文字変換を指示するための変換キーと、変換結果を確定させるための確定キーとを含み、文字または文字列及び必要な情報を入力するための入力手段と、変換結果の候補文字または候補文字列を少なくとも表示し出力するための出力手段と、前記入力手段から入力される情報

に基づき、候補文字または候補文字列の属性を特定する属性特定手段と、前記入力手段から入力されたキーに対応する数字または入力された複数のキーに対応する数字列について、前記辞書手段を検索して候補文字または候補文字列を求めるに際して、前記属性特定手段により特定された属性情報に該当する候補文字または候補文字列を求め、この候補文字または候補文字列を前記出力手段へ送出する文字変換手段と、前記確定キーの操作に基づいて前記求められた候補文字または候補文字列の中から1つを確定する確定手段とを具備することを特徴とする。

【0015】本願の請求項8に記載の文字入力端末装置では、処理に係る複数のモードと属性を得るための指示内容とが対応付けられて記憶された指示内容メモリを備え、属性特定手段は、処理中のモードを検出し、このモードに対応する指示内容を上記指示内容メモリから得て、該指示内容に基づき入力に係る文字または文字列の属性を得ることを特徴とする。

【0016】本願の請求項9に記載の文字入力端末装置は、文字または文字列の入力に際して、入力中の文字または文字列の位置を示すカーソルを出力手段に表示するカーソル表示手段と、このカーソルの位置に対応して入力に係る文字または文字列の属性情報が対応付けられて記憶されたカーソル位置メモリとを備え、属性特定手段は、上記カーソル表示手段によるカーソルの表示位置及び上記カーソル位置メモリの内容から、入力に係る文字または文字列の属性を得ることを特徴としている。

【0017】本願の請求項10に記載の文字入力端末装置では、属性特定手段は、入力手段から入力されるその後の入力に係る文字または文字列の属性の指示内容に応じて、入力に係る文字または文字列の属性を得ることを特徴とする。

【0018】本願の請求項11に記載の文字入力端末装置は、求められる候補文字または候補文字列が複数ある場合は、操作者へ通知する文字または文字列を前記変換キーにより選択して通知する手段をさらに備えることを特徴とする。

【0019】本願の請求項12に記載の文字入力端末装置は、おのおののキーに複数の文字が割り当てられ、数字を入力するための数字キーと、数字と候補文字とが対応して記憶されるとともに、数字列と候補文字列とが対応して記憶され、前記数字列の字数は前記候補文字列の字数以上である辞書手段と、前記辞書手段に結合され、前記入力された数字または入力された数字列に対応した候補文字または候補文字列を発生する発生手段と、前記発生された候補文字または候補文字列を表示する表示手段と、前記表示された候補文字または候補文字列の中から1つを選択する決定手段とを具備することを特徴とする。

【0020】

【発明の実施の形態】以下添付図面を参照して本発明の実施の形態に係る文字入力装置を説明する。各図の説明において同一の構成要素には、同一の符号を付して重複する説明を省略する。図1には本発明の実施の形態に係る文字入力装置が適用された携帯無線電話機の正面図が示されている。ハンドセット101は、やや偏平な直方体状の筐体からなり、その表面中央から下部にかけては、4行3列のキーからなるテンキー（ダイヤルキー）103が設けられ、その上方には文字・記号等の情報を表示するための表示部102が設けられている。また、表示部102の上方には、送られてくる音声を受取るための受話部104Aが設けられており、更に、テンキー103の下方位置には音声を入力するための送話部105Aが設けられている。

【0021】図2には、上記の携帯無線電話機の内部構成が示されている。携帯無線電話機は、各部を制御するコントローラ1と、情報を入力するための入力部2と、電波の送受信を行うアンテナ5と、このアンテナ5に接続され信号の送受信を行う送受信部3と、この送受信部3と受話器104、送話器105との間で音声信号の送受を行う通話回路4とから構成されている。受話器104、送話器105は、それぞれ、図1の受話部104Aと送話部105Aとに対応する。コントローラ1は、通話に関する制御を行うための通話制御部6と、入力部2からの入力に基づく文字入出力処理を行う文字入出力部7とから構成されている。通話制御部6は、入力部2からの入力に応じた発信制御、アンテナ5及び送受信部3を介して到来する着信信号に応じた着信制御、通話回路4に対する増幅度の調整等の制御を行う。また、通話制御部6は、文字入出力部7から送られるデータを送受信部3を介して送信させ、また、受信したデータを文字入出力部7へ送出する機能を有している。入力部2には、電話機としての動作モードと文字入力装置としての動作を切り換えるモード切換スイッチが設けられている。このモード切換スイッチは、フックスイッチでもよく、フックスイッチを使用する場合には、例えば、オンフック時に文字入力装置としての動作モードとなる。

【0022】図3には、図1の携帯無線電話機が文字入力装置としての動作モードとなった場合の構成図が示されている。この構成は、図2においては、入力部2と文字入出力部7とからなる部分である。文字入力装置は、文字等の入力を行うためのキーボード11と、キーボード11におけるキー操作の情報を取り込み中央制御部13に送出する入力制御部12と、文字入力装置の各部を統括制御する中央制御部13と、入力文字または入力文字列と変換結果の候補文字または候補文字列とが対応付けられて記憶された辞書手段310である単語辞書14と、中央制御部13から与えられる入力文字または入力文字列について単語辞書14を参照して対応する候補文字または候補文字列を得る辞書検索部15と、文字等の

情報が表示されるLCD等からなる表示装置16と、中央制御部13の制御の下に候補文字または候補文字列等を表示装置16に表示させるための制御を行う表示制御部17とを具備している。キーボード11のテンキー103の各数字キーには、仮名文字が複数個ずつ割り当てられている。つまり、通常のダイヤルキーの配置の数字キーの、「1」キーには五十音の「あ」行の5文字が割り当てられ、「2」キーには五十音の「か」行の5文字が割り当てられ、以下同様に「0」キーまでに仮名文字が割り当てられている。但し、「8」キーには「や」「ゆ」「よ」が割り当てられ、「0」キーには「わ」「を」「ん」「ー」が割り当てられている。また、「*」キーは変換/次候補キーとされ、「#」キーは確定キーとされている。上記において、キーボード11は、複数の仮名文字が割り当てられた複数のキーと、文字変換を指示するための変換/次候補キーと、変換結果を確定させるための確定キーとを含み、文字または文字列を入力するための入力手段300であり、表示装置16は、変換結果の候補文字または候補文字列を少なくとも表示し出力するための出力手段330であり、中央制御部13及び辞書検索部15は、入力手段300から入力されたキー対応の文字または入力された複数のキー対応の文字列について、上記辞書手段310を検索して候補文字または候補文字列を求め、この候補文字または候補文字列を上記出力手段330へ送出する文字変換手段320を構成している。

【0023】図4には上記キーボード11の構成が示されている。テンキー103の各キーに対応してキーマトリックス10が設けられ、キーマトリックス10の各スイッチの一方の接点にはプルアップ抵抗及びロウ（row）方向ラインOut0～Out3を介して5Vの電圧が常時与えられており、ロウ方向ラインOut0～Out3の端点は入力制御部12へ至っている。また、キーマトリックス10の各スイッチの他方の接点にはカラム（column）方向ラインM0～M2が接続され、カラム方向ラインM0～M2の端点は入力制御部12へ至っている。

【0024】一方、入力制御部12は図5に示されるように構成されている。入力制御部12は、全体の制御を行う制御部20、タイマ21、メモリテーブル22、メモリ（MEM2）23、メモリ（MEM1）24、ラッチ25、26とにより構成される。ラッチ25は制御部20から送出されるカラム方向ラインM0～M2に対するドライブ信号をラッチする回路であり、ラッチ26はロウ方向ラインOut0～Out3の信号を取り込みラッチする回路である。タイマ21は、キー操作時に発生するチャタリングを除去すべく設けられており、2重にキー操作の読み込みを行うために、所定時間間隔（1ms）を制御部20に通知する。メモリ23にはラッチ25に出力したドライブ信号がセットされ、メモリ24にはその時にラッチ26に保持された検出信号がセットされる。メモリテーブル2

2は操作されたキーを特定するためのデータが格納されているもので、その内容は図6に示されるようである。即ち、メモリ23にセットされるデータが、図6のMEM2のセット値「0」、「1」、「2」のそれぞれのときに、MEM2の下3欄のM2～M0を1セットとする3パターンがそれぞれ対応し、ラッチ25にセットされていることを示す。従って、ラッチ25にMEM2の下3欄のM2～M0を1セットとする横方向に並ぶ3パターンのいずれかがセットされると、これに対応して、メモリ23に図6のMEM2におけるセット値「0」、「1」、「2」の数字いずれかがセットされ、これに対してラッチ26には、図6のMEM1の右4欄の横方向に並ぶ0ut3～0ut1を1セットとする4パターンのいずれかがセットされ、この値がメモリ24にセットされる。このため、図6のMEM1の横方向に並ぶ4パターンのいずれかとMEM2のセット値「0」、「1」、「2」のいずれかとの交点の位置の数字が操作されたキーの数字を示すことになる。例えば、メモリ23に「1」がセットされ、メモリ24に「1011」がセットされると、メモリテーブル22からは「5」キーを示すコードが出力される。このとき、ラッチ25には「（M2～M0）101」がセットされたことを示す。

【0025】制御部20は図7に示されるフローチャートのプログラムによりキー読み込みを行うので、このフローチャートに従って、制御部20の動作を説明する。まず、カラム方向ラインM0～M2の全てに「0」を出力すべくラッチ25に信号をラッチさせ（S1）、ロウ方向ラインOut0～Out3のいずれかに「0」が現れるのをラッチ26にラッチされる信号に基づき監視する（S2）。「0」が現れると、タイマ21を参照して1ms待ち（S3）、ロウ方向ラインOut0～Out3の信号をラッチ26から取り込みメモリ24にセットする（S4）。さらに、タイマ21を参照して1ms待ち（S5）、ロウ方向ラインOut0～Out3の信号をラッチ26から取り込み、既にメモリ24にセットされている内容と等しいかを検出する（S6）。ここで、等しくないときには、再びステップS2へ戻って動作を継続し、一方、1度目と2度目との読み込み結果が等しいときには、カラム方向ラインM0のみへ「0」を出力すべくラッチ25に信号「110（＝M2M1M0）」をラッチさせると共に、メモリ23には「0」をセットし（S7）、ラッチ26にラッチされるロウ方向ラインOut0～Out3の信号のいずれかに「0」があるかを検出する（S8）。つまり、カラム方向ラインM0のみへ「0」を出力したとき、図4のカラム方向ラインM0に接続されている4個のキーのいずれかが操作されていると、ロウ方向ラインOut0～Out3の信号のいずれかに「0」が出現する。ここで、ロウ方向ラインOut0～Out3の信号のいずれにも「0」がなければ、カラム方向ラインM1のみへ「0」を出力すべくラッチ25に信号「101」をラッチさせると共に、メモリ23には

「1」をセットし(S9)、ラッチ26にラッチされる。ロウ方向ラインOut0~Out3の信号のいずれかに「0」があるかを検出する(S10)。つまり、カラム方向ラインM1のみへ「0」を出力したとき、図4のカラム方向ラインM1に接続されている4個のキーのいずれかが操作されていると、ロウ方向ラインOut0~Out3の信号のいずれかに「0」が出現する。更に、ここで、ロウ方向ラインOut0~Out3の信号のいずれにも「0」がなければ、カラム方向ラインM2のみへ「0」を出力すべくラッチ25に信号「011」をラッチさせると共に、メモリ23には「2」をセットし(S11)、ラッチ26にラッチされるロウ方向ラインOut0~Out3の信号のいずれかに「0」があるかを検出する(S12)。つまり、カラム方向ラインM2のみへ「0」を出力したとき、図4のカラム方向ラインM2に接続されている4個のキーのいずれかが操作されていると、ロウ方向ラインOut0~Out3の信号のいずれかに「0」が出現する。

【0026】以上の処理の結果、いずれの場合にもロウ方向ラインOut0~Out3の信号のいずれにも「0」が出現しなければ、ステップS1に戻って動作を継続し、上記ステップS8、S10、S12のいずれかの場合にロウ方向ラインOut0~Out3の信号のいずれかに「0」が出現すると、ロウ方向ラインOut0~Out3の信号をラッチ26から取り込み、メモリ24にセットする(S13)。次に、制御部20はメモリテーブル22に出力を指示し、この結果メモリ23、24にセットされた信号に基づきメモリテーブル22の検索が行われ(S14)、メモリテーブル22から出力されたキーのコードを中央制御部13へ送出する。次に、カラム方向ラインM0~M2の全てに「0」を出力すべくラッチ25に信号をラッチさせ(S15)、ロウ方向ラインOut0~Out3の全てが「1」となったか(復旧したか)を検出し(S16)、オール「1」が得られると検出後にタイマ21を参照して1msの経過後(S17)、ロウ方向ラインOut0~Out3の全てが「1」となったか(復旧したか)を検出し(S18)、オール「1」が得られると、ステップS1に戻って動作を続ける。以上のようにして、テンキー103のいずれのキーが操作されたのかを示すコード(例えば、数字に対応するコード)が中央制御部13へ送出される。

【0027】図8には上記文字入力装置の表示制御部17の詳細構成が示されている。表示制御部17は、文字フォント(キャラクタパターン)が記憶された文字フォントメモリ31、この文字フォントメモリ31のフォントを中央制御部13の制御により画像メモリ33に展開する文字フォント展開部32、(LCD)表示装置16に表示する画像データをビットマップにより保持する画像(ビットマップ)メモリ33、表示中の表示フォントデータ(キャラクタコード)を表示位置と共に記憶するためのキャラクタ位置メモリ34から構成されている。

【0028】上記表示制御部17には、中央制御部13から表示フォントデータ、表示位置データ、展開開始指示信号、キャラクタ位置メモリ34の位置データ(アドレス)が与えられる。つまり、展開開始指示信号と共に、表示フォントデータが送られることにより、文字フォント展開部32は文字フォントメモリ31をアクセスして与えられた表示フォントデータに対応する表示フォントを取り出し、表示位置データ(画像メモリ33の座標)に基づき画像メモリ33の対応位置に格納する。これにより、LCD表示装置16の画面の画素に1対1で画像メモリ33のデータ位置が対応付けられているため、該当の位置に展開された表示フォントの画素データが記憶される。一方、キャラクタ位置メモリ34には、表示フォントデータと表示位置データとが、中央制御部13から送られる位置データの位置に記憶されてゆく。中央制御部13はこれをリード信号を用いて読み出すことができ、表示中のデータ(表示フォントデータ)をその表示位置データと共に読み出し、図2の通話制御部6、送受信部3及びアンテナ5を介して他の端末に送信する等の処理を行うことができる。

【0029】図9には上記文字入力装置の辞書検索部15の詳細構成が示されている。辞書検索部15は、この辞書検索部15全体を統括制御する制御部40と、キー入力された文字や文字列のコードを蓄える文字入力バッファ41と、単語辞書14の辞書検索時に用いられるコードポインタ42と、辞書検索の結果得られた候補文字または文字列のコードを保持するための検索結果文字出力バッファ43とから構成されている。

【0030】図10には、単語辞書14に記憶されている内容が示されている。つまり、テンキー103の操作による数字のコードに対応して、仮名による文字または文字列、漢字による文字または文字列及び、品詞、場所、時間等の属性情報、その他の情報からなる辞書情報が対応付けられて記憶されている。より具体的には、単語辞書14の構成は図11から図13に示される通りに構成される。まず、単語辞書14は、図11に示す通り、文字数単位に区分されたブロックから構成されている。各文字数対応のブロックは、図12に示される通り、当該文字数の数字列に対応した複数のブランチから構成される。ここでは、文字数が5文字のブロックに5文字の数字列に対応する複数のブランチが存在し、その中の数字列「41281」に対応するブランチが明示され、他のブランチでは所定数字が「*」により示されている。更に、図13には、数字列「41281」に対応するブランチの内部が示されている。ブランチ内には、存在する場合の後続数字(0)から(9)に対応したテーブル(従って、後続数字が例えば(1)と(8)とだけである場合には、2テーブル)と、後続数字が無い場合の数字列に対応する候補の先頭を示すSOS(00)に対応するテーブルとが含まれている。後続数字(0)

から(9)に対応したテーブルには、対応の後続数字と、次テーブルのポインタNTPと、次ブランチのポインタNBPとがセットされている。一方、SOS(00)に対応するテーブルには、後続数字が無い場合の(つまり、この例では数字列「41281」に対応する)候補の先頭を示すコードSOS(00)、文字または文字列コードStr1~Strn(1からnまでの文字コードでn候補を表わす)、候補文字または候補文字列コードの終了を示すコードEOS(FF)、ブランチの終了を示すコードEOB(FF)がセットされている。候補が複数あるときには、複数の候補の間にも候補の先頭を示すコードSOS(00)が登録される。属性情報を記憶させる場合には、それぞれの候補の文字列コードStr1~Strnの次に、属性情報であることを示す符号と共にセットされる。

【0031】上記のように、1ブランチ内に複数の候補文字または候補文字列が存在するのは、通常の日本語ワードプロセッサのように、同音異義語が存在することによるばかりでなく、1キーに複数の仮名文字を割り当てたためである。例えば、「1」キー、「2」キーが続けて操作された場合は、「あ」行と「か」行の文字列の入力であるから、「赤(あか)」、「秋(あき)」、「池(いけ)」、「桶(おけ)」等が候補文字列として存在する。図13に例示の数字列「41281」の場合には、「東京(とうきょう)」、「提供(ていきょう)」等が存在する。上記の例で明らかな様に、拗音の候補、濁音の候補、半濁音の候補等を清音に置き換えて辞書化してある。

【0032】図9に示された辞書検索部15の制御部40は、図14に示されるフローチャートのプログラムにより単語辞書14の検索処理を行うので、このフローチャートに従って、制御部40の動作を説明する。制御部40は文字入力バッファ41をクリアし(S21)、入力文字または入力文字列のコード(数字キーのコード)が到来するのを待つ(S22)。この例では、操作者が図15のST1に示すように「とうきょう」を入力文字とする。そこで、操作者は携帯無線電話機のテンキー103の対応キーを操作することになる。この図15のテンキー103では、図1のテンキー103とは異なり、丸い四隅を有するキートップ自体に仮名文字が表記され、しかも、仮名文字が平仮名ではなくカタカナとなっている。本文字入力装置は、図1の実施の形態のテンキー103であっても、この図15のテンキー103であっても適切な入力が可能であることを示す。テンキー103の数字キーは図15のST2に示されるように「41281」と操作される。操作者はST2の「41281」に対応する仮名文字の内、枠により囲った仮名文字を所望して入力を行ったことを示す。

【0033】すると、図7において説明した入力制御部12の動作により、操作に係る数字キーに対応するコー

ドが得られ、上記「41281」に対応するコード列が文字入力バッファ41に格納される。次に操作者は、図15のST3に示すように、変換を求めて変換/次候補キーである「*」キーを操作する。この「*」キーについても、図7において説明した入力制御部12の動作により、コードに変換されて中央制御部13へ送出される。これを受けた中央制御部13は図9の制御部40に検索スタート信号を送出する。そこで、図14に示されるように、検索スタートかを監視していた(S23)制御部40は、コードポインタ42をリセットし(S24)、データセレクト信号をセット状態とする(S25)。次に、制御部40は、文字入力バッファ41に格納されているコードを先頭から取り出し、単語辞書14の文字数1のブロックから検索を始める。検索の手法は何番目の数字についても同様であるので、ここでは、文字数3のブロックにおける検索から説明する。

【0034】図16には、文字数3のブロックにおける検索からの処理が示されている。数字列「412」に応じて、文字数3のブロックのアドレス「3F0F」のテーブルに行き着く。このテーブルの後続数字は「1」であり、文字入力バッファ41に格納されている数字列「41281」の第4番目の数字「8」とは異なるので、NTPに基づき次のテーブルを検索する。ここでは、数字列「412」に続く数字が「1」である候補と、「8」である候補とだけが存在しているため、たちまち、後続数字が「8」のテーブルを検索できている。通常は、後続数字が「1」のテーブルの次は、後続数字が「2」のテーブル、その次は後続数字が「3」のテーブル・・・というようにして、後続数字が「8」のテーブルに到達する。

【0035】後続数字が一致すると、このテーブルのNBPに基づき文字数4のブランチ「4128」の第1テーブルに行き着く。このテーブルでは、後続数字が「1」であり、文字入力バッファ41に格納されている数字列「41281」の第5番目の数字「1」と一致する。後続数字が一致すると、このテーブルのNBPに基づき次のブランチ「41281」のテーブルに行き着く。ここでは本来、文字入力バッファ41に格納されている後続数字が無いから、後続数字のエリアに「00」がセットされているテーブルを検索する。この図16の例では、単語辞書14においても数字列「41281」に続く数字を持つ候補が無いこと、つまりテーブルがないことを前提としており、ブランチ「4128」のテーブルから、直ちに後続数字のエリアに「00(=SOS)」がセットされているアドレス「98AC」のテーブルに行き着いている。

【0036】図16の例では、第1番目の候補文字列に「東京」がセットされており、コードポインタ42の出力値「0」に対応して、「東京」のコードが読み出される。以上の処理が、図14におけるステップS25の

「検索」からステップS26、S27、S28のループの処理に対応している。ステップ27におけるコードポインタ42の歩進は、図16におけるテーブルを順次検索するときに対応すると共に、目的のテーブルにおいて、各候補文字を指示して読み出す場合にも対応している。従って、実際的には図16において行われている候補文字の検索は、図10に示した単語辞書14を検索している場合と等価である。なお、この例では、「東京」が得られたが、もし、入力された数字列に対応する候補文字が単語辞書14内に記憶されていなければ、コードポインタ42にNEXT信号を与えてその値を歩進し（S27）、ステップS28からステップS26へのループを繰り返す。最終的に候補文字または候補文字列が検出できないときには、ステップS28においてYESへ分岐する。つまり、コードポインタ42からEND信号が返される。そこで、制御部40は検索結果情報により「該当なし」を中央制御部13へ送出する。「該当なし」を受けた中央制御部13は表示制御部17に「該当なし」の文字フォントを送出し、該当する候補がない旨をLCD表示装置16に表示させる（S29）。

【0037】上記のようにして得られた「東京」のコードは検索結果文字出力バッファ43に出力される（S30）。検索結果情報により結果出力の通知が中央制御部13に与えられ、「東京」のコードは検索結果文字出力バッファ43から中央制御部13に取り込まれ、更に表示制御部17に送られ、図8の説明において説明した通りにして、（LCD）表示装置16における表示に供される。つまり、（LCD）表示装置16には「東京」が表示される。辞書検索部15の制御部40は確定キーの操作または次候補キーの操作を監視している（S31、S32）。確定キーの操作または次候補キーの操作は前述の変換キーの操作の場合と同様にして入力制御部12から中央制御部13へ送出される。

【0038】図15の例では、「東京」が所望の文字であるので、ST4に示すように、確定キーが操作されている。中央制御部13は確定キーのコードを得て、検索スタート信号をインアクティブに遷移させる。辞書検索部15の制御部40はこれを受けてステップ31からYESへ分岐し、上記候補文字を確定させる。なお、単語辞書14に「41281」に対応して、平仮名の「とうきょう」、漢字の「東京」が順に格納されているときには、図15のST5に括弧にて示されるように、まず、平仮名の「とうきょう」の表示に対して次候補キーが操作され、これによりコードポインタ42にNEXT信号を与えてその値を歩進し（S27）、次候補の漢字の「東京」のコードを得てステップS26からS30へと進む。この場合も、漢字の「東京」が所望の文字であるので、ST4に示すように、確定キーが操作される。以降の処理は前述と同様に処理が行われることになる。

【0039】以上の通り、第1の実施の形態に係る文字

入力装置は、各キーに複数の仮名文字が割り当てられ、かつ、変換／次候補キー、確定キーを備えるので、操作されたキーに割り当てられた仮名文字に対応する候補文字または操作された複数のキーに割り当てられた仮名文字列の組み合わせから構成される候補文字列を適切に入力して選択することができる。つまり、少ないキーを持つ情報端末には好適である。

【0040】上記第1の実施の形態では、変換／次候補キーである「＊」キーを操作しなければ、表示部102に何等の表示がなされないため、正しいキー操作がなされているのか否か判らず、操作性が必ずしも良くない。そこで、第2の実施の形態では、辞書検索部15の制御部40が備える図14のフローチャートに対応するプログラムを図17のフローチャートに対応するプログラムに代える。つまり、ステップS22において、制御部40は入力文字または入力文字列のコード（数字キーのコード）が到来するのを待つ。テンキー103の数字キーが操作されると、中央制御部13はこれに対応するコードを文字入力バッファ41に格納すると共に、図17のステップS100に示されるように表示制御部17へ転送する。このように、辞書検索部15（制御部40）は、テンキー103が操作されると、このキーに対応するコード（数字のコード）を検出し、表示制御部17へ送出して表示に供するコード送出手段として機能する。表示制御部17ではこれをパターン化して画像メモリ33に書き込み、対応する数字を表示させる。制御部40は変換／次候補キーである「＊」キーの操作を監視しているが（S23）、この「＊」キー対応のコードが到来しなければ、ステップS22に戻って、入力文字または入力文字列のコード（数字キーのコード）の到来を待つ。

【0041】「とうきょう」に対応して「41281」とキー入力した場合には、各キーの操作毎に、図18に示されるように、「4」、「41」、・・・、「41281」と操作されたキー対応の数字が増加して表示され、キー入力が受け付けられていること及びその操作が間違いないこと、つまり、「とうきょう」のそれぞれの仮名文字が割り当てられている数字キーが操作されていることを確認することができる。変換／次候補キーである「＊」キーが操作された場合においては、第1の実施の形態と同様に単語辞書14を用いた文字変換が行われ、単語辞書14から対応する候補文字のコードが読み出され、これが上記数字列「41281」の表示に代えられて表示される。なお、図18の例では、単語辞書14の数字列「41281」に対応するテーブルの第1候補文字列が「とうきょう」と平仮名表記になっていたことを示している。

【0042】図19には、第3の実施の形態に係る文字入力装置における辞書検索部15の制御部40が備えるプログラムに対応するフローチャートが示されている。

この実施の形態においても、ステップS22において、制御部40は入力文字または入力文字列のコード（数字キーのコード）が到来するのを待つ。テンキー103の数字キーが操作されると、中央制御部13はこれに対応するコードを文字入力バッファ41に格納すると共に、図19のS110に示されるように数字に対応する行文字を表示制御部17へ転送する。つまり、中央制御部13は、数字コードと行文字との変換テーブルを有しており、数字コードから行文字を得て表示制御部17へ転送する。表示制御部17ではこれをパターン化して画像メモリ33に書き込み、対応する文字を表示させる。上記テーブルを詳述すると、「1」のコードと「あ」のコード、「2」のコードと「か」のコード、「3」のコードと「さ」のコード、・・・、「0」のコードと「わ」のコードとが対応付けられたテーブルである。

【0043】図19に示す通り、制御部40は変換／次候補キーである「＊」キーの操作を監視しているが（S23）、この「＊」キー対応のコードが到来しなければ、ステップS22に戻って、入力文字または入力文字列のコード（数字キーのコード）の到来を待つ。第1の実施の形態の場合と同様に、「とうきょう」に対応して「41281」とキー入力した場合には、各キーの操作毎に、図20に示されるように、「た」、「たあ」、・・・、「たあかやあ」と、操作されたキー対応の行文字が増加して表示され、キー入力を受け付けられていること及びその操作が間違いないこと、つまり、「とうきょう」のそれぞれの仮名文字が割り当てられているキーが操作されていることを確認することができる。変換／次候補キーである「＊」キーが操作された場合においては、第1の実施の形態と同様に単語辞書14を用いた文字変換が行われ、単語辞書14から対応する候補文字のコードが読み出され、これが上記行文字列「たあかやあ」の表示に代えられて表示される。なお、図20の例では、単語辞書14の数字列「41281」に対応するテーブルの第1候補文字列が「とうきょう」と平仮名表記になっていたことを示している。

【0044】図21には、上記第3の実施の形態において、行文字をローマ字により表示する第3の実施の形態の変形例が示されている。この変形例の場合、中央制御部13が備えるテーブルでは、「1」のコードと「A」のコード、「2」のコードと「K」のコード、「3」のコードと「S」のコード、・・・、「0」のコードと「W」のコードとが対応付けられている。従って、「とうきょう」に対応して「41281」とキー入力した場合には、各キーの操作毎に、図21に示されるように、「T」、「TA」、・・・、「TAKYA」と、操作されたキー対応の行文字が増加して表示され、キー入力を受け付けられていること及びその操作が間違いないこと、つまり、「とうきょう」のそれぞれの仮名文字が割り当てられているキーが操作されていることを確認する

ことができる。なお、この第3の実施の形態では、中央制御部13が備えるテーブルにより変換を行ったが、他の構成として、図5に示される入力制御部12に備えられているメモリテーブル22により、平仮名で行名の文字を、或いはローマ字で行名の文字を得るようにすることも可能である。この場合、単語辞書14についても、数字または数字列と候補文字または候補文字列を対応させるのではなく、平仮名の行名の文字または文字列と候補文字または候補文字列を対応させ、或いはローマ字の行名の文字または文字列と候補文字または候補文字列を対応させて構成する。このように構成しても、キー入力を受け付けられていること及びその操作が間違いないことの確認を行えることは勿論、第1の実施の形態と同様に、少ないキー数による入力で適切な文字、文字列を得ることができる。

【0045】図22には、第4の実施の形態に係る文字入力装置における辞書検索部15の制御部40が備えるプログラムに対応するフローチャートが示されている。この実施の形態では、制御部40は変換／次候補キーである「＊」キーの操作を監視することなく、コードポインタ42をリセットし（S24）、データセレクト信号をセット状態とし（S25）、更に、文字入力バッファ41に格納されているコードを先頭から取り出し、単語辞書14の文字数1のブロックから検索を始める。

【0046】この第4の実施の形態において、「とうきょう」に対応して「41281」とキー入力した場合には、各キーの操作毎に、図23に示されるように、「た」、「第」、「待機」、・・・、「東京」が表示される。つまり、単語辞書14の「4」に対応する候補文字のテーブルの第1候補が「た」であり、単語辞書14の「41」に対応する候補文字のテーブルの第1候補が「第」であり、単語辞書14の「412」に対応する候補文字のテーブルの第1候補が「待機」であり、単語辞書14の「4128」に対応する候補文字のテーブルの第1候補が「退去」であり、単語辞書14の「41281」に対応する候補文字のテーブルの第1候補が「東京」であることにより、変換／次候補キーを何等操作することなく、上記の順で変換された候補文字または候補文字列が表示される。

【0047】変換／次候補キーを操作しない限りは、現在の検索結果を表示に供し（S33）、ステップS22へ戻って処理を継続する。また、該当する候補がない旨をLCD表示装置16に表示させた場合（S29）において、確定キーまたは変換／次候補キーの操作を検出し（S34、S35）、これらのキー操作がなければステップS22へ戻って処理を継続し、上記ステップS34、または、S35において、確定キーまたは変換／次候補キーが操作されると異常処理へ移行するようにしている。このため、本実施例の形態は入力途中の数字に対応する候補文字または候補文字列がない場合において、

確定キーまたは変換／次候補キーが操作されるという不正操作に対応する構成を有することになる。

【0048】なお、入力途中において候補文字無しとなることを避けるため、単語辞書14の各数字に、当該行名の文字を割り当てておくこともできる。この場合、変換の結果、図20に示したように行名の文字が表示される。また、図24には、変換／次候補キーを操作しないときの変換結果であることを示すため、単語辞書14の数字または数字列に対応する候補文字のテーブルの第1候補に、本来の第1候補の平仮名コードをセットした変形例の表示結果が示されている。つまり、単語辞書14の「4」に対応する候補文字のテーブルの第1候補が「た」であり、単語辞書14の「41」に対応する候補文字のテーブルの第1候補が「だい」であり、単語辞書14の「412」に対応する候補文字のテーブルの第1候補が「たいき」であり、単語辞書14の「4128」に対応する候補文字のテーブルの第1候補が「たいきょ」であり、単語辞書14の「41281」に対応する候補文字のテーブルの第1候補が「とうきょう」である。これにより、「41281」とキー入力した場合には、各キーの操作毎に、図24に示されるように、「た」、「だい」、「たいき」、・・・、「とうきょう」が表示される。このように、キー操作に応じて平仮名文字が表示され、変換／次候補キーを操作していないことが明瞭であり、しかも、正しく入力できているか否かを知ることができる。

【0049】上記各実施の形態では、変換候補を1つだけ表示したが、第5の実施の形態では、変換の候補文字または候補文字列が複数ある場合には、これらを所定個ずつ表示する。図25には、第5の実施の形態に係る文字入力装置における辞書検索部15の制御部40が備えるプログラムに対応するフローチャートの要部が示されている。この第5の実施の形態では、第1の実施の形態の図14のステップS30～S32、S27に対応する処理を図25に示すように行う。つまり、単語辞書14から候補を取り出すときには存在する所定個までの候補を取り出し、選択数字と共に検索結果文字出力バッファ43へ出力する(S30-A)。これにより、表示部102の表示画面には、図26の下方に示すように、「東京」、「提供」、「東急」、「帝京」が、選択数字1～4と共に表示される。

【0050】制御部40は選択数字の入力を待ち(S31-A)、入力された場合には、この候補文字を確定させる。また、選択数字の入力がなければ、次候補キーの操作を検出し(S32)、次候補キーが操作されると、コードポインタ42を上記所定候補数分(上記図26の例では、4個分)歩進し(S27-A)、他の候補の検索へと進む。このように第5の実施の形態では、複数の候補が存在する場合には、これらを同時表示して選択に供するので、候補文字の確定を迅速に行うことができる

効果がある。

【0051】図27には、第6の実施の形態に係る文字入力装置の構成図が示されている。この実施の形態では、表示装置16の画面上に貼着されるタッチパネル50が設けられ、このタッチパネル50からの操作入力座標値を入力制御部12-Aが検出する。つまり、表示装置16に相当の表示部102の画面には、図29に示されるように透明シート51が貼着されている。透明シート51の下部所定位置には透明電極52が設けられ、透明電極52に対向する画面上の位置には、例えば、透明の異方向導電性ゴム等を介して透明対向電極53が設けられている。透明シート51の下部所定位置の透明電極52、透明電極52に対向する透明対向電極53は、図のように、例えば、4個設けられ、これらには、図4において説明したキーマトリックスと同様に、カラム方向ライン及びロウ方向ラインが接続され、また、図4から図7において説明した如くにして、いずれの位置が操作されたかを入力制御部12-Aが検出している。つまり、入力制御部12-Aは、タッチパネル50における入力操作位置を検出する位置検出手段55を構成している。

【0052】図28には、第6の実施の形態に係る文字入力装置における辞書検索部15の制御部40が備えるプログラムに対応するフローチャートが示されている。この実施の形態では、第1の実施の形態の図14のステップS30～S32、S27に対応する処理を図28に示すように行う。つまり、単語辞書14から候補を取り出すときには存在する所定個までの候補を取り出し、「次候補」の文字(または、「スクロール」と共に検索結果文字出力(LCD表示用)バッファ43へ出力する(S30-A)。これにより、図29の下方に示すように、表示制御部17は表示部102の表示画面の透明電極52の位置に、「東京」、「提供」、「東急」「次候補」を表示する(S36)。制御部40はタッチパネル50における操作位置の検出を行い(S37)、操作位置の座標に基づき対応して表示されている候補文字を検出し(S38)、この候補文字を確定させる(S40)。このように、辞書検索部15は確定手段として機能する。

【0053】また、次候補キーの操作を検出した場合には(S38)、表示用ポインタを変更して(S39)、コードポインタ42を上記所定候補数分(上記図29の例では、3個分)歩進し(S27-A)、他の候補の検索へと進む。つまり単語辞書14の対応するテーブルの候補文字列について候補を表示するためのポインタと単語辞書14のテーブル内から候補文字を検索のためのポインタとが共通であるときには、これらを共に3個分進めることにより、存在するときには次の3候補が取り出され、表示される。このように第6の実施の形態では、複数の候補が存在する場合には、これらを同時表示して

タッチパネル50により選択可能とするので、候補文字の確定を確実に迅速に行うことができる効果がある。

【0054】本発明の各実施の形態に係る文字入力装置は、入力文字の訂正を行う等のために、図30に示すようにカーソルCを表示させると共に、キーボード11にカーソル移動キー61、62、消去キー63が備えられている。ここでは、1行分の文字表示を行うため、カーソル移動キー61、62は、左右方向の一对のキーにより構成されているが、2行以上の文字表示を行う構成を採用する場合には、これに加えて上下方向の一对のカーソル移動キーが設けられる。カーソル移動キー61、62の操作情報も、図4から図7により説明した他のキーの操作情報と同様に、入力制御部12により検出され、中央制御部13を経由して表示制御部17へ与えられる。

【0055】表示制御部17はカーソル表示について、カーソルポインタに基づきカーソルCを1文字表示領域単位で文字表示領域の下行に移動表示する。そして、表示制御部17は、文字の入力とカーソル移動キーの操作情報とに基づき、カーソルポインタを図31のフローチャートに示すプログラムにより制御する。つまり、文字コードの到来を検出し(S41)、文字コードが到来するとカーソルポインタを1歩進める(S42)。これによって、カーソルCは1文字分前進する。また、文字コードが到来しない場合には、カーソル移動が生じたかをカーソル移動キーの操作情報の到来により検出し(S43)、操作情報が到来しなければ、ステップS41へ戻って監視が続けられ、カーソル移動が生じると移動方向に応じてカーソルポインタが増減される(S44)。これにより、カーソルCが1文字単位で前進または後退することになる。誤入力の文字を訂正する場合は、カーソル移動キー61、62によりカーソルCを訂正すべき文字位置に移動し、消去キー63を操作して消去し、正しい文字を入力する。この場合、第1の実施の形態では、変換/次候補キーを操作した後でなければ表示が行われないが、ステップS29の該当する候補がない旨をLCD表示装置16に表示させた後の異常処理において、第2の実施の形態の如くに入力数字または入力数字列を表示するようにし、ここで訂正を保証する。つまり異常処理では、文字列入力バッファ41にセットされている数字列を表示制御部17へ送出する。訂正後に変換/次候補キーが操作されると、図14のフローチャートのステップS23以降の処理を行う。

【0056】図32には、第7の実施の形態に係る文字入力装置の構成図が示されている。この実施の形態では、中央制御部13に再度検索SW(スイッチ)18が接続され、単語辞書検索の結果、該当する候補がない旨がLCD表示装置16に表示された場合に、入力文字または入力文字列について変更を行い、再度辞書検索による変換を行わせる指示を与え得るようになっている。つ

まり、中央制御部13及び辞書検索部15は、候補文字または候補文字列が得られないときに、上記再度検索SW18がオンであることを条件に、入力文字または入力文字列について変更を行い、再度変換を行わせる変更手段60として機能するものである。なお、再度検索SW18は、機械的なスイッチではなく、レジスタで構成されている。

【0057】図33には、第7の実施の形態に係る文字入力装置における辞書検索部15の制御部40が備えるプログラムに対応するフローチャートが示されている。この実施の形態では、単語辞書14の検索処理において、制御部40は文字入力バッファ41をクリアすると共に再度検索SW18をリセットし(S48)、入力文字または入力文字列のコード(数字キーのコード)が到来するのを待つ(S22)。これ以降の処理は第1の実施の形態と同様であり、ステップS29において、該当する候補がない旨がLCD表示装置16に表示された場合に、ステップS45からステップS47の処理を行う点で相違している。

【0058】つまり、ステップS29において、該当する候補がない旨がLCD表示装置16に表示された場合には、次に、再度検索SW18のオン・オフを検出する(S45)。最初のときには、ステップS48におけるリセットによりオフとなっているから、NOへ分岐し、最後の1文字(数字)を削除し(S46)、再度検索SW18をオンとし(S47)、削除の結果得られた文字(数字)または文字(数字)列について、単語辞書14の検索を行うため、ステップS24からの処理を繰り返す。このように文字列の最後尾の1文字を削除することにより、助詞等の付属語が削除されて単語辞書14に登録されている候補文字に一致することが期待される。つまり、本実施の形態により、入力文字列の自動訂正が行われる。

【0059】なお、このような文字列の変更にも拘らず、ステップS29において、該当する候補がない旨がLCD表示装置16に表示された場合には、既に、再度検索SW18がオンとなっているため、ステップS45においてはYESへ分岐し、異常処理へと進む。この異常処理では、図30、図31において説明した通りにして、訂正を行うことが可能である。また、本実施の形態の機能を行うか否かについて、キーボード11から例えば特番(通常使用されないキー入力であって、例えば、「#*#?(?=数字)?(?=数字)」等)の入力がなされた場合には、設定を解除し、自動訂正は行わない。その後、自動訂正が必要となると、上記と同じ特番を入力して自動訂正機能をオンとすることができる。

【0060】図34には、第8の実施の形態に係る文字入力装置の構成図が示されている。この実施の形態では、中央制御部13にエラー補正テーブル70とメモリ(PMEM)71、メモリ(KMEM)72が接続されている。

本実施の形態のエラー補正テーブル70は、キー操作の際に誤操作となるキーの候補テーブルであり、図35に示されるように構成されている。つまり、数字キーの種類「1」～「0」に対応して、誤操作する可能性のあるキー（即ち、配置において近接するキー）を確率の高い順に並べたものである。メモリ71には、置き換えに使用している数字候補の順位が記憶され、メモリ72には、入力文字または入力文字列の何番目を置き換えているかがセットされる。中央制御部13及び辞書検索部15は、候補文字または候補文字列が得られないときに、上記エラー補正テーブル70を使用して、入力文字または入力文字列について変更を行い、再度変換を行わせる変更手段60-Aとして機能するものである。

【0061】図36、図37には、第8の実施の形態に係る文字入力装置における辞書検索部15の制御部40が備えるプログラムに対応するフローチャートが示されている。この実施の形態では、単語辞書14の検索処理において、制御部40は文字入力バッファ41をクリアすると共にメモリ（PMEM）71、メモリ（KMEM）72をクリアし（S50）、入力文字または入力文字列のコード（数字キーのコード）が到来するのを待つ（S22）。これ以降の処理は第1の実施の形態と同様であり、ステップS29において、該当する候補がない旨がLCD表示装置16に表示された場合に、図37に示されるブレ異常処理へ進む点で相違している。

【0062】図37に示されるブレ異常処理では、メモリ71の値を「1」インクリメントし（S51）、エラーテーブル70に候補があるかを検出する（S52）。つまり、置換すべき第1候補があるかを検出している。当初は、図35から明らかなように、候補があるから、YESへ分岐し、メモリ72の内容を「1」インクリメントし（S54）、この場合は入力文字または入力文字列の第1番目を置換すべきことを指示する。そして、メモリ72により指示された位置の文字が文字入力バッファ41に存在するかを検出する（S55）。1文字以上の文字が存在するときには、エラー補正テーブル70を検索して、メモリ72が示す文字とメモリ71が示す候補順位とから対応の文字を検索し（S56）、ここで得られた文字で文字列入力バッファ41内のメモリ72が示す位置の文字を置換し、図36のフローチャートのステップS24からの処理を継続する。つまり、置換の結果得られた文字列について単語辞書14を検索して候補文字を得る。上記の結果、また、検索結果が得られなければ、再度ブレ異常処理が行われ、次の候補について置換が行われる。或る文字位置の候補がなくなると、ステップS52においてNOへ分岐し、メモリ71をリセットし（S53）、メモリ72の内容を「1」インクリメントする（S54）。これにより、入力文字列の第2番目の文字について置換が行われて行く。斯して、この実施の形態によれば、キー操作の誤りにより近接するキー

を操作した場合に自動的に置換訂正されて、所望の入力を行うことが可能である。このようにして自動置換訂正が行われても、検索結果が得られることなく、文字列中の最後の文字の置換が終了するとステップS55においてNOへ分岐し、異常処理が行われる。

【0063】上記異常処理では、図30、図31において説明した通りにして、訂正を行うことが可能である。また、本実施の形態の機能を行うか否かについて、キーボード11から例えば特番（通常使用されないキー入力であって、例えば、「##*#?（数字）?（数字）」等）の入力がなされた場合には、設定を解除し、置換訂正は行わない。その後、置換訂正が必要となると、上記と同じ特番を入力して自動置換訂正機能をオンとすることができる。なお、本実施の形態では、入力文字列の先頭側から置換を行ったが、末尾から置換を行っても同様な効果が期待できる。

【0064】図38には、第9の実施の形態に係る文字入力装置の構成図が示されている。この実施の形態では、中央制御部13にキャラクタ範囲情報テーブル75が接続されており、このキャラクタ範囲情報テーブル75には、図39に示すように、送信相手端末の識別情報（例えば、電話番号）に対応して扱えるキャラクタの範囲（仮名までか漢字を扱えるか）が予め記憶されている。中央制御部13はキャラクタ範囲情報テーブル75から範囲情報を得て文字変換手段である辞書検索部15へ渡す範囲情報取得手段76を構成する。

【0065】範囲情報取得手段76である中央制御部13は図40のフローチャートのプログラムを実行することにより、範囲情報を取得する。すなわち、相手先指定があるかを検出する（S61）。この実施の形態では、文字入力装置のモードとなる前に、例えば、特番により相手先指定により入力を行うことを指示し、相手端末の識別情報（電話番号）を入力する。中央制御部13はこれを取り込み（S62）、キャラクタ範囲情報テーブル75を検索して対応する宛先端末が扱えるキャラクタの範囲を示す範囲情報を取得する（S63）。この取得した範囲情報を上記識別情報（電話番号）と共にレジスタに記憶しておく（S64）。これ以降、単語辞書14に対する検索ルーチンへ進む。

【0066】図41には、第9の実施の形態に係る文字入力装置における辞書検索部15の制御部40が備えるプログラムに対応するフローチャートが示されている。この実施の形態では、ステップS26において候補文字または候補文字列を検出するまでの処理は、第1の実施の形態に等しい。しかし、候補を検出すると、相手端末において漢字が扱えるかを前述のレジスタを参照して検出し（S60）、漢字が扱えない場合には、仮名コードの候補を選択する（S61）。この場合、漢字コードを付記表示のため選択しておいても良い。これにより、相手端末が漢字を扱えない場合には、仮名による候補が選

択され（付記表記する実施の形態にあっては、付記表記の漢字と共に）表示される。

【0067】上記のようにして、入力文字が確定すると、図2に示されるように、通話制御部6へ文字入出力部7から文字列コード及び前述のレジスタに記憶されていた相手端末の識別情報が与えられ、発呼及びデータの送信が送受信部3及びアンテナ5を介して行われる。この様にして、相手端末の能力に応じた文字変換がなされ、適切なコードが送られ、相手端末で処理が不能となることはない。なお、キャラクタ範囲情報テーブル75に登録の無い識別情報が入力されたときには、漢字を扱えないものとして処理を行う。つまり、低機能の処理を行うことにより、相手端末において処理が不能となることを防止する。

【0068】なお、第9の実施の形態では、漢字を扱えるか否かによる範囲としたが、他に、数字まで、或いは、ローマ字表記まで、または、同一種による外字までの範囲等、範囲の区分があり得る。これらの場合には、対応してテーブルの範囲情報を細分しておく。このようにする場合（本第9の実施の形態でもそうであるが）、低機能の処理に合わせた辞書構成が必要である。つまり、漢字の候補以外に同じ単語に対して仮名文字コードを用意する。また、数字の候補、ローマ字表記の候補が用意されて辞書化が行われる。

【0069】更に、第9の実施の形態では、予め範囲情報を用意したが、このキャラクタ範囲情報テーブル75の内容は更新可能である。つまり、特番等により、キャラクタ範囲情報テーブル75の内容は更新を指示し、相手先識別情報と範囲情報のペアを入力する。これにより、中央制御部13がキャラクタ範囲情報テーブル75の内容を更新する。同一相手先識別情報のときには、情報が上書きされ、新規相手先識別情報のときには、新規登録がなされる。更に、相手端末との通信時に前手順を設けてDTMF信号により、範囲情報を得るようにしても良く、また、交換網が相手端末から得た範囲情報を制御チャネルを使用して送出するようにしても良い。これらの場合でも、相手端末の能力に応じたメッセージ等の文字列を送信することができる効果がある。

【0070】次に、本発明の第10の実施の形態について説明する。この実施の形態に係る文字入力装置が適用された携帯無線電話機は、図42に示すようにテンキー103の下側に複数の処理モードを選択するためのモードキー64と、表示部102において、入力する文字または文字列の位置を示すカーソルKを移動させるための左移動キー65、右移動キー66が備えられている。これらのキーは、所定特番の入力により、テンキー103のいずれかに代用させても良いものである。モードキー64は操作毎に、保有するモードを次々に呼び出すためのものであり、例えば、本装置が、通話モード、データ通信モード、文字入力モード、電話番号登録モード、定

型文入力モード、検索モード等を有している。係る場合には、初期状態では通話モードであり、1回のモードキー64の操作により通話モードとなり、更に1回のモードキー64の操作によりデータ通信モードとなり、以下操作毎にモードが変更され、最後のモードのときに更にモードキー64を操作すると通話モードへ戻るように構成されている。図42に示すように表示部102に複数行の表示がなされているとき、左移動キー65、または、右移動キー66を操作し続けると、この行に亘って移動させることができる。つまり、第1行目最右位置にカーソルKが位置しているとき、例えば、右移動キー66を操作し続けると、第1行目最左位置から第2行目最右位置に移動し、更に第2行目最左位置方向へと移動する。このカーソルKの表示制御は、図30及び図31を用いて説明したように、キー操作情報を図43に示す中央制御部13Aが入力制御部12を介して取り込み、これを表示制御部17へ与えることにより、表示制御部17が行うものである。

【0071】本実施の形態においては、入力に係る文字または文字列の属性を特定して、単語辞書14から適切な候補文字または候補文字列を検索でき、所望の単語（漢字等）を迅速に得るようにする。図43には、本実施の形態に係る文字入力装置の構成が示されている。つまり、この文字入力装置は、入力文字または入力文字列と変換結果の候補文字または候補文字列及びその属性情報とが対応付けられて記憶された辞書手段310と、複数の仮名文字が割り当てられた複数のキーと、文字変換を指示するための変換／次候補キーと、変換結果を確定させるための確定キーとを含み、文字または文字列及び必要な情報を入力するための入力手段300と、変換結果の候補文字または候補文字列を少なくとも表示し出力するための出力手段330と、上記入力手段300から入力された情報に基づき、入力文字または入力文字列の属性を特定する属性特定手段350と、上記入力手段300から入力されたキー対応の文字または入力された複数のキー対応の文字列について、上記辞書手段310を検索して候補文字または候補文字列を求めるに際して、上記属性特定手段350により特定された属性情報に該当する候補文字または候補文字列を求め、この候補文字または候補文字列を上記出力手段330へ送出する文字変換手段320Aとを具備する。上記属性特定手段350は、中央制御部13Aと入力単語属性記憶部19により構成される。入力単語属性記憶部19は、現在入力されている文字または文字列の属性情報を記憶するために用いられる。

【0072】図44には、辞書手段310を構成する単語辞書14の内容の一部が示されている。つまり、テンキー103の操作による数字のコードに対応して、仮名による文字または文字列、漢字等による文字または文字列の候補、更に、地名、人名、団体名等のように、上記

漢字等による文字または文字列の候補に関する属性情報が記憶されている。この例では、属性情報は上記漢字等による文字または文字列の候補に対し、1つとしてあるが、2つ以上記憶しておいても良い。例えば、属性「地名」は属性「場所」でもあり、属性「一般」の例えば「下さい。」の属性として「行為」を当てることができる。この単語辞書14の実際上の構成は、図11から図13を用いて説明した通りである。

【0073】また、本実施の形態の装置は、属性を特定するために、図45と図46に示すようなメモリを中央制御部13Aが備えている。図45には、この装置の処理に係る複数のモードと属性を得るための指示内容とが対応付けられて記憶された指示内容メモリ77が示されている。ここでは、通話モード、データ通信モードに対応しては「0」がセットされており、属性に関する処理が行われないことが示され、文字入力モードに対応しては「キー入力による指示」と登録がなされており、文字入力モードにおいては、キー入力により直接に属性情報が入力された場合にこれに従うことが示され、電話番号登録モード、定型文1の入力モード、検索3のモードに対応しては、カーソル位置メモリ78の飛び先アドレス「aaa」等がセットされており、検索1、検索2においては、属性情報（「地名」、「団体名」等）がそのままセットされている。図45におけるPはポインタであり、いずれのモードが実行されているかを示すものであり、この図45の例においては、電話番号登録モードが実行されていることを示している。

【0074】図46は、カーソルKの位置に対応して入力に係る文字または文字列の属性情報が対応付けられて記憶されたカーソル位置メモリ78を示す。例えば、電話番号登録モードでは、指示内容メモリ77から飛び先アドレスaaaを得て、カーソル位置メモリ78のアドレスaaaへ飛び、カーソルKの位置が「カーソル座標」のいずれに属するか（ $x_1 \sim x_2$ 、 $x_3 \sim x_4$ 、 $x_5 \sim x_6$ 、 $x_7 \sim x_8$ ）は、それぞれ、入力項目の「名前」、「所属」、「住所」、「電話番号」の領域の座標を表す。）に応じて属性が「人名」、「団体名」、「地名」、「数字」のいずれであるか特定される。つまり、電話番号登録モードでは、図42に示されるような表示が表示部102に行われ、入力する項目が、「名前」、「所属」、「住所」、「電話番号」であるため、これらの項目に対応する属性「人名」、「団体名」、「地名」、「数字」が記憶されている。

【0075】上記に対し、定型文1の入力モードでは、表示部102には図47に示されるように、所望の時（とき）に所望の場所で所望の行為をすることを入力するような表示が成されるので、座標 $x_{11} \sim x_{14}$ では属性が「時（とき）」であり、座標 $x_{15} \sim x_{18}$ では属性が「地名」であり、座標 $x_{19} \sim x_{22}$ では属性が「行為」となる。この定型文1の入力モードにより、「明日、昼

（とき）」に「特許庁（場所）」で「会いましょう。（行為）」等を入力することが可能である。更に、検索1のモードは、例えば、上記電話番号登録モードにおいて登録した内容から、特定の場所に在住の人のデータを検索するためのもので、表示部102には図48に示されるように地名の入力を求める表示がなされ、例えば、「東京」を入力して東京に在住の人の検索をするように用いることができる。このため、検索1のモードでは、属性は「地名」であり、この属性「地名」が直接に指示内容メモリ77に検索1に対応付けられて記憶されている。更に、検索2のモードは、例えば、上記電話番号登録モードにおいて登録した内容から、特定の団体に所属する人のデータを検索するためのもので、表示部102には図49に示されるように団体名の入力を求める表示がなされ、例えば、「営業部」等を入力して営業部に所属する人の検索をするように用いることができる。このため、検索2のモードでは、属性は「団体名」であり、この属性「団体名」が直接に指示内容メモリ77に検索2に対応付けられて記憶されている。

【0076】中央制御部13Aは図50に示されるフローチャートのプログラムにより、属性情報特定手段350として動作するので、これを説明する。この装置の起動によりスタートとなり、モード検出を行う（S71）。つまり、モードキー64の操作に応じて図45のポインタPが対応するモードを指すように移動させ、このポインタPの指すモードを検出する。ここで、図45に示す指示内容メモリ77の当該モード「電話番号登録」を参照し、属性指示内容がセットされているかを検出する（S72）。「電話番号登録」に対応しては、座標位置メモリ78への飛び先アドレスaaaが設定されているので、カーソルKの座標を表示制御部17から得ると共に、この座標値と座標位置メモリ78への飛び先アドレスaaaに記憶されているカーソル座標の範囲とを比べて、カーソルKがどのカーソル座標の範囲にあるか検出し、対応する属性情報を得る（S73）。例えば、図42に示されるようにカーソルKが入力項目「所属」の領域にあるときには、カーソルKの座標がカーソル位置メモリ78の座標 $x_3 \sim x_4$ に範囲にあり、属性「団体名」を得ることができる。なお、検索1のモード等のような場合には、指示内容メモリ77から直接に属性情報を得ることができる。次に、中央制御部13Aは、この属性情報を入力単語属性記憶部19にセットし（S74）ステップ71へ戻って処理を継続する。なお、ステップS72において、属性指示内容がセットされていないことを検出した場合（「0」がセットされていることを検出した場合）には、「属性なし」を入力単語属性記憶部19にセットし（S75）ステップ71へ戻って処理を継続する。この様に、中央制御部13Aは常に属性情報を変更している。

【0077】図51には、本実施の形態において採用さ

れている辞書検索部15Aの詳細が示されている。この辞書検索部15Aは、中央制御部13Aが入力単語属性記憶部19の属性情報を読み出して送出してくるのを受け、記憶しておくための検索状態保持部45を備える点で、図9の辞書検索部15と相違している。制御部40Aは上記検索状態保持部45に属性情報をセットし、単語辞書14から単語データと共に属性情報を得たときに検索状態保持部45の属性情報と比較して候補の決定を行う。

【0078】上記制御部40Aは図52に示されるフローチャートのプログラムにより動作するので、これを説明する。制御部40Aは文字入力バッファ41をクリアし(S21)、中央制御部13Aが入力単語属性記憶部19から読み出して送出してくる属性情報を受けて検索状態保持部45にセットする(S62)。この結果、検索状態保持部45には、入力単語属性記憶部19の属性情報または「属性情報なし」がセットされる。つぎのステップS22から入力に係る数字または数字列と単語辞書14のコードとを比較するS26までは第1の実施の形態の場合と同様の動作を続け、ここで、入力された数字または数字列に対応する候補文字が単語辞書14内に記憶されていないければ、コードポインタ42にNEXT信号を与えてその値を歩進し(S27)、ステップS28においてコードポインタ42が指す候補が無くラストのエントリが終了したかを検出し、他にエントリがあればステップS26へ戻って処理を続ける。そして、ステップS28にてラストであることが検出されると、検索状態保持部45の内容を調べ属性情報がセットされているか否かを検出する(S63)。ここで、属性情報がセットされていると、リセットし「属性情報なし」に変え(S64)、更にステップS25に戻って動作を続ける。

【0079】一方、ステップS26において、候補が検出されると、検索状態保持部45の内容を調べ属性情報がセットされているか否かを検出する(S65)。ここで、属性情報がセットされていると、この属性情報と得られた候補の属性情報とが一致するか否かを検出し(S66)、一致しなければ、ステップS27へ進んで他の候補を検索する。属性情報は既述の通り、図13ではそれぞれの候補(Str1~n)の後に付加されて記憶されている。この様な処理を行う内にステップS66において属性情報が一致すると、この候補のコードを検索結果文字出力バッファ43に出力し(S30)、以降は第1の実施の形態と同様の処理を行う。また、ステップS65において属性情報がリセット、つまり、「属性情報なし」であると、属性情報の一致不一致を検出すること無く、第1の実施の形態と同様の処理を続ける。

【0080】斯して、本実施の形態によれば、入力に係る文字または文字列の属性を特定して、単語辞書14から候補文字または候補文字列を検索するとき当該属性の候補を抽出して出力するので、所望の単語等(漢字等)

を迅速に得ることができる。つまり、入力された数字または数字列に対応する候補が複数ある場合に、所望の属性の候補(例えば、「地名」)ばかりが選択されて出力されるので、操作者はある程度絞られた候補の中から所望の変換結果に係る文字(漢字等)を得ることができ、効率的である。

【0081】なお、上記の構成例において、単語辞書14に単語毎の使用頻度情報を持たせ、使用頻度の高い候補から出力するように構成する構成例では、良く使用する候補がより早く出力され、変換結果を得るまでの時間をより短縮することができ、便利である。

【0082】次に、英語圏向けの本発明の実施の形態に係る文字入力装置を説明する。図53には本実施の形態に係る文字入力装置が適用された携帯無線電話機の正面図が示されている。ハンドセット101は、やや扁平な直方体状の筐体からなり、その表面中央から下部にかけては、4行3列のキーからなるテンキー(ダイヤルキー)103Eが設けられ、その上方には文字・記号等の情報を表示するための表示部102が設けられている。また、表示部102の上方には、送られてくる音声を聴取するための受話部104Aが設けられ、また、テンキー103Eの下方位置には音声を入力するための送話部105Aが設けられている。

【0083】上記の携帯無線電話機の内部構成は、図2に示した第1の実施の形態のものに等しい。図54には、図53の携帯無線電話機が文字入力装置としての動作モードとなった場合の構成図が示されている。この構成は、図2の携帯無線電話機の内部構成においては、入力部2と文字入出力部7とからなる部分に相当している。文字入力装置は、文字等の入力を行うためのキーボード11と、キーボード11におけるキー操作の情報を取り込み中央制御部13に送出する入力制御部12と、文字入力装置の各部を統括制御する中央制御部13と、入力文字または入力文字列と変換結果の候補文字または候補文字列とが対応付けられて記憶された辞書手段310Eである単語辞書14Eと、中央制御部13から与えられる入力文字または入力文字列について単語辞書14Eを参照して対応する候補文字または候補文字列を得る辞書検索部15と、文字等の情報が表示されるLCD等からなる表示装置16と、中央制御部13の制御の下に候補文字または候補文字列等を表示装置16に表示させるための制御を行う表示制御部17とを具備している。キーボード11のテンキー103Eの各数字キーには、アルファベットが複数個ずつ割り当てられている。つまり、通常のダイヤルキーの配置の数字キーの、「2」キーには「A」、「B」、「C」の3文字が割り当てられ、「3」キーには「D」、「E」、「F」の3文字が割り当てられ、以下同様に「9」キーまでにアルファベットが3文字ずつ割り当てられ、「0」キーには「Q」、「Z」が割り当てられている。また、「*」キ

ーはconversion（変換／次候補）キーとされ、「#」キーはdecision（確定）キーとされている。上記において、キーボード11は、複数のアルファベットが割り当てられた複数のキーと、文字変換を指示するための変換／次候補キーと、変換結果を確定させるための確定キーとを含み、文字または文字列を入力するための入力手段300であり、表示装置16は、変換結果の候補文字または候補文字列を少なくとも表示し出力するための出力手段330であり、中央制御部13及び辞書検索部15は、入力手段300から入力されたキー対応の文字または入力された複数のキー対応の文字列について、上記辞書手段310Eを検索して候補文字または候補文字列を求め、この候補文字または候補文字列を上記出力手段330へ送出する文字変換手段320を構成している。

【0084】上記キーボード11の構成は図4に示されている第1の実施の形態の構成に等しく、入力制御部12の構成は図5に示されている第1の実施の形態の構成に等しく、上記入力制御部12に含まれているメモリテーブル22の内容は図6に示されている第1の実施の形態の構成に等しく、更に、上記入力制御部12に含まれている制御部20が行うキー読み込み動作は図7に示されている第1の実施の形態の動作に等しい。また、この実施の形態における文字入力装置の表示制御部17の詳細構成は図8に示されている第1の実施の形態の構成に等しく、更に、この実施の形態における文字入力装置の辞書検索部15の詳細構成は図9に示されている第1の実施の形態の構成に等しい。

【0085】図55には、単語辞書14Eに記憶されている内容が示されている。つまり、テンキー103Eの操作による数字のコードに対応して、アルファベットによる文字または文字列（word）及び、品詞、場所、時間等の属性情報、その他の辞書情報からなる辞書情報が対応付けられて記憶されている。例えば、テンキー103Eにより、「86596」と入力すると、「Tokyo」及びその属性情報等が得られる辞書構成となっている。より具体的には、単語辞書14Eの構成は図56から図58に示される通りに構成される。まず、単語辞書14Eは、図56に示す通り、文字数単位に区分されたブロックから構成されている。各文字数対応のブロックは、図57に示される通り、当該文字数の数字列に対応した複数のブランチから構成される。ここでは、文字数が5文字のブロックに5文字の数字列に対応する複数のブランチが存在し、その中の数字列「25625」に対応するブランチが明示され、その他の数字列に対応するブランチでは数字が「*」にて表示されている。更に、図58には、数字列「25625」に対応するブランチの内部詳細が示されている。ブランチ内には、存在する場合の後続数字（0）から（9）に対応したテーブル（従って、後続数字が例えば（1）と（8）とだけである場合には、2テーブル）と、後続数字が無い場合の数字列に

対応する候補の先頭を示すSOS（00）に対応するテーブルとが含まれている。後続数字（0）から（9）に対応したテーブルには、対応の後続数字と、次テーブルのポインタNTPと、次ブランチのポインタNBPとがセットされている。一方、後続数字が無い場合の数字列に対応する（SOS（00）が先頭にセットされた）テーブルには、後続数字が無い場合の（つまり、数字列「25625」に対応する）候補の先頭を示すコードSOS（00）、文字または文字列の候補コードStr1~Strm（n文字により構成されることを示す）、候補文字または候補文字列コードの終了を示すコードEOS（FF）、ブランチの終了を示すコードEOB（FF）がセットされている。属性情報は候補コード（Str1~Strmにより構成）の、それぞれ後に識別情報を示す符号と共に付加されて記憶されている。

【0086】上記のように、1ブランチ内に複数の候補文字または候補文字列が存在するのは、1キーに複数のアルファベット文字を割り当てたためである。例えば、「2」キー、「3」キーが続けて操作された場合は、「A」、「B」、「C」のいずれかと「D」、「E」、「F」のいずれかとの組み合わせによる9通りの候補文字列の内、単語として意味のある「be」等が候補文字列として存在する。図57に例示の数字列「25625」の場合には、この数字列に対応して意味のある単語「clock」、「block」等が存在する。

【0087】辞書検索部15の制御部40は、第1の実施の形態と同様に、図14に示されるフローチャートのプログラムにより単語辞書14Eの検索処理を行うので、このフローチャートに従って、制御部40の動作を説明する。制御部40は文字入力バッファ41をクリアし（S21）、入力文字または入力文字列のコード（数字キーのコード）が到来するのを待つ（S22）。この例では、操作者が図59のST1に示すように「clock」を入力文字とする。そこで、操作者は携帯無線電話機のテンキー103Eの対応キーを操作することになる。この図59のテンキー103Eでは、図1のテンキー103Eとは異なり、丸い四隅を有するキートップ自体にアルファベット文字が表記されている。本文字入力装置は、図1の実施の形態のテンキー103であっても、この図59のテンキー103Eであっても適切な入力が可能であることを示す。テンキー103Eの数字キーは図59のST2に示されるように「25625」と操作される。操作者はST2の「25625」に対応するアルファベット文字の内、枠により囲ったアルファベット文字を所望して入力を行ったことを示す。

【0088】すると、図7において説明した入力制御部12の動作により、操作に係る数字キーに対応するコードが得られ、上記「25625」に対応するコード列が文字入力バッファ41に格納される。次に操作者は、図59のST3に示すように、変換を求めて変換／次候補

キーである「＊」キーを操作する。この「＊」キーについても、図7において説明した入力制御部12の動作により、コードに変換されて中央制御部13へ送出される。これを受けた中央制御部13は図9の制御部40に検索スタート信号を送出する。そこで、図14に示されるように、検索スタートかを監視していた(S23)制御部40は、コードポインタ42をリセットし(S24)、データセクタ信号をセット状態とする(S25)。次に、制御部40は、文字入力バッファ41に格納されているコードを先頭から取り出し、単語辞書14Eの文字数1のブロックから検索を始める。検索の手法は何番目の数字についても同様であるので、ここでは、文字数3のブロックにおける検索から説明する。

【0089】図60には、文字数3のブロックにおける検索からの処理が示されている。数字列「25625」が入力されたとき、1桁目の数字「2」から検索がなされ、更に、2桁目までの数字列「25」について検索がなされ、更に、数字列「256」に応じて、文字数3のブロックのアドレス「3F0F」のテーブルに行き着く。このテーブルの後続数字は「1」であり、文字入力バッファ41に格納されている数字列「25625」の第4番目の数字「2」とは異なるので、NTPに基づき次のテーブルを検索する。ここでは、数字列「256」に続く数字が「1」である候補と、「2」である候補とだけが存在しているため、たちまち、後続数字が「2」のテーブルを検索できている。通常は、後続数字が「1」のテーブルの次は、後続数字が「2」のテーブル、その次は後続数字が「3」のテーブル・・・というようにして、所望の後続数字のテーブルに到達する。

【0090】後続数字が一致すると、このテーブルのNBPに基づき文字数4のブランチ「2562」の第1テーブルに行き着く。このテーブルでは、後続数字が「5」であり、文字入力バッファ41に格納されている数字列「25625」の第5番目の数字「5」と一致する。後続数字が一致すると、このテーブルのNBPに基づき次のブランチ「25625」のテーブルに行き着く。ここでは本来、文字入力バッファ41に格納されている後続数字が無いから、後続数字のエリアに「00」がセットされているテーブルを検索する。この図60の例では、単語辞書14Eにおいても数字列「25625」に続く数字を持つ候補が無いこと、つまりテーブルがないことを前提としており、ブランチ「2562」のテーブルから、直ちに後続数字のエリアに「00」がセットされているアドレス「98AC」のテーブルに行き着いている。

【0091】図60の例では、第1番目の候補文字列に「clock」(コード:63, 6c, ...)がセットされており、コードポインタ42の出力値「0」に対応して、「clock」のコードが読み出される。以上の処理が、図14におけるステップS25の「検索」か

らステップS26、S27、S28のループの処理に対応している。ステップ27におけるコードポインタ42の歩進は、図60におけるテーブルを順次検索するときに対応すると共に、目的のテーブルにおいて、各候補文字を指示して読み出す場合にも対応している。従って、実際的には図60において行われている候補文字の検索は、図55に示した単語辞書14Eを検索している場合と等価である。なお、この例では、「clock」が得られたが、もし、入力された数字列に対応する候補文字が単語辞書14E内に記憶されていなければ、コードポインタ42にNEXT信号を与えてその値を歩進し(S27)、ステップS28からステップS26へのループを繰り返す、最終的に候補文字または候補文字列が検出できないときには、ステップS28においてYESへ分岐する。つまり、コードポインタ42からEND信号が返される。そこで、制御部40は検索結果情報により「該当なし」を中央制御部13へ送出する。「該当なし」を受けた中央制御部13は表示制御部15に「該当なし」の文字フォントを送出し、該当する候補がない旨をLCD表示装置16に表示させる(S29)。

【0092】上記のようにして得られた「clock」のコードは検索結果文字出力バッファ43に出力される(S30)。検索結果情報により結果出力の通知が中央制御部13に与えられ、「clock」のコードは検索結果文字出力バッファ43から中央制御部13に取り込まれ、更に表示制御部17に送られ、図8により説明した通りにして、(LCD)表示装置16における表示に供される。つまり、(LCD)表示装置16には「clock」が表示される。辞書検索部15の制御部40は確定キーの操作または次候補キーの操作を監視している(S31、S32)。確定キーの操作または次候補キーの操作は前述の変換キーの操作の場合と同様にして入力制御部12から中央制御部13へ送出される。

【0093】図59の例では、「clock」が所望の文字であるので、ST4に示すように、確定キーが操作されている。中央制御部13は確定キーのコードを得て、検索スタート信号をインアクティブに遷移させる。辞書検索部15の制御部40はこれを受けてステップ31からYESへ分岐し、上記候補文字を確定させる。なお、単語辞書14Eに「25625」に対応して、「block」、「clock」が順に格納されているときには、図59のST5に括弧にて示されるように、まず、「block」の表示に対して次候補キーが操作され、これによりコードポインタ42にNEXT信号を与えてその値を歩進し(S27)、次候補の「clock」のコードを得てステップS26からS30へと進む。この場合も、「clock」が所望の文字であるので、ST4に示すように、確定キーが操作される。以降の処理は前述と同様に処理が行われることになる。

【0094】以上の通り、この実施の形態に係る文字入

力装置は、各キーに複数のアルファベット文字キーが割り当てられ、かつ、変換／次候補キー、確定キーを備えるので、操作されたキーに割り当てられたアルファベット文字に対応する候補文字または操作された複数のキーに割り当てられたアルファベット文字列の組み合わせから構成される候補文字列を適切に入力して選択することができる。つまり、少ないキーを持つ情報端末には好適である。

【0095】上記の実施の形態では、変換／次候補キーである「*」キーを操作しなければ、表示部102に何等の表示がなされないため、正しいキー操作がなされているのか否か判らず、操作性が必ずしも良くない。そこで、辞書検索部15の制御部40が備える図14のフローチャートに対応するプログラムを図17のフローチャートに対応するプログラムに代える。これにより、「clock」に対応して「25625」とキー入力した場合には、各キーの操作毎に、図61に示されるように、「2」、「25」、・・・、「25625」と操作されたキー対応の数字が増加して表示され、キー入力が受け付けられていること及びその操作が間違いないこと、つまり、「clock」のそれぞれのアルファベット文字が割り当てられている数字キーが操作されていることを確認することができる。変換／次候補キーである「*」キーが操作された場合においては、単語辞書14Eを用いた文字変換が行われ、単語辞書14Eから対応する候補文字のコードが読み出され、これが上記数字列「25625」の表示に代えられて表示される。なお、図61の例では、単語辞書14Eの数字列「25625」に対応するテーブルの第1候補文字列が「clock」となっていたことを示している。

【0096】更に、第3の実施の形態に係る文字入力装置における辞書検索部15の制御部40が備えるテーブルとして、「2」から「0」までに、その対応するキーに割り当てられたアルファベットの内の最初の文字が第1候補として記憶されている場合、つまり、「2」のコードと「a」のコードが、「3」のコードと「d」のコードが、「4」のコードと「g」のコードが、「5」のコードと「j」のコードが、・・・、「0」のコードと「q」のコードが対応付けられたテーブルを有する場合には、図19のプログラムに対応するフローチャートの処理を実行することにより、「clock」に対応して「25625」とキー入力した場合には、各キーの操作毎に、図62に示されるように、「a」、「aj」、・・・、「ajmaj」と、操作されたキー対応の先頭の文字が増加して表示され、キー入力が受け付けられていること及びその操作が間違いないこと、つまり、「clock」のそれぞれのアルファベット文字が割り当てられているキーが操作されていることを確認することができる。変換／次候補キーである「*」キーが操作された場合においては、上記と同様に単語辞書14Eを用いた

文字変換が行われ、単語辞書14Eから対応する候補文字のコードが読み出され、これが上記行文字列「ajmaj」の表示に代えられて表示される。なお、図62の例では、単語辞書14Eの数字列「25625」に対応するテーブルの第1候補文字列が「clock」となっていたことを示している。

【0097】更に、第4の実施の形態に係る文字入力装置における辞書検索部15の制御部40が備える図22のプログラムに対応するフローチャートの処理を実行することにより、「beer」に対応して「2337」とキー入力した場合には、各キーの操作毎に、図63に示されるように、「a」、「be」、「add」、・・・、「beer」が表示される。つまり、単語辞書14Eの数字「2」に対応する候補文字のテーブルの第1候補が「a」であり、単語辞書14Eの数字列「23」に対応する候補文字のテーブルの第1候補が「be」であり、単語辞書14Eの数字列「233」に対応する候補文字のテーブルの第1候補が「add」であり、単語辞書14Eの数字列「2337」に対応する候補文字のテーブルの第1候補が「beer」であることにより、変換／次候補キーを何等操作することなく、上記の順で変換された候補文字または候補文字列が表示される。

【0098】更に、第5の実施の形態に係る文字入力装置における辞書検索部15の制御部40が備える図25のプログラムに対応するフローチャートの処理を実行することにより、単語辞書14Eから候補を取り出すときには存在する所定個までの候補を取り出し、選択数字と共に検索結果文字出力バッファ43へ出力する。これにより、「227」のキー操作に応じて表示部102の表示画面には、図64の下方に示すように、「bar」、「cap」、「car」が、選択数字1～3と共に表示される。制御部40は選択数字の入力を待ち、入力された場合には、この候補文字を確定させる。また、選択数字の入力がなければ、次候補キーの操作を検出し、次候補キーが操作されると、コードポインタ42を上記所定候補数分（上記図64の例では、3個分）歩進し、他の候補の検索へと進む。このように複数の候補が存在する場合には、これらを同時表示して選択に供するので、候補文字の確定を迅速に行うことができる効果がある。

【0099】更に、上記英語圏用の装置が第6の実施の形態の構成を採用することにより、図65の下方に示すように、表示制御部17は表示部102の表示画面の透明電極52の位置に、「bar」、「cap」、「car」、「次候補（英語）」を表示する。次候補キーの操作を検出した場合には、表示用ポインタを変更して、コードポインタ42を上記所定候補数分（上記図65の例では、3個分）歩進し、他の候補の検索へと進む。つまり単語辞書14Eの対応するテーブルの候補文字列について候補を表示するためのポインタと単語辞書14Eのテーブル内から候補文字を検索するためのポインタとが

共通であるときには、これらを共に3個分進めることにより、存在するときには次の3候補が取り出され、表示される。このように、複数の候補が存在する場合には、これらを同時表示してタッチパネル50により選択可能とするので、候補文字の確定を確実に迅速に行うことができる効果がある。

【0100】上記英語圏用の装置も、入力文字の訂正を行う等のために、図30の構成と同様に図66に示すようにカーソルCを表示させると共に、キーボード11にカーソル移動キー61、62、消去キー63が備えられている。そして、表示制御部17は、文字の入力とカーソル移動キー61、62の操作情報とに基づき、カーソルポインタを図31のフローチャートに示すプログラムにより制御する。そして、異常処理において、入力数字または入力数字列を表示するようにし、ここで訂正を保証する。つまり異常処理では、文字入力バッファ41にセットされている数字列を表示制御部17へ送出する。訂正後に変換/次候補キーが操作されると、図14のフローチャートのステップS23以降の処理を行う。これにより、誤入力の訂正を適切に行うことができる。

【0101】更に、第10の実施の態様において説明した動作についても、図44に示した単語辞書14に対応する属性情報を備える英語版の単語辞書を具備させ、第10の実施の態様と同様の他の構成を備えさせることにより、属性が分かっている単語を入力する場合には、所望の単語等（英単語等）を迅速に得ることができる。つまり、入力された数字または数字列に対応する英単語の候補が複数ある場合に、所望の属性の候補が選択されて出力され、操作者はある程度絞られた候補の中から所望の変換結果に係る単語（英単語等）を得ることができ、効率的である。

【0102】次に、上記英語圏用の文字入力装置において、文の先頭の文字を大文字とする実施の形態を説明する。この文字入力装置が適用された携帯無線電話機では、図67に示されるように、テンキー103Eの下方にスペース（space）キー67と、改行（return）キー68が設けられてキーボード11Aが構成されている。また、テンキー103Eの「1」キーには、ピリオド（「.」）が対応付けられている。キーボード11Aからの入力コードは、キー対応であり、また、単語辞書13Eの候補文字または候補文字列の各文字コードは小文字コードにより構成されている。

【0103】図68には、上記文字入力装置の構成が示されている。この実施の形態においては、図54の構成に対し、中央制御部13Aの構成が異なっている。つまり、中央制御部13Aには、入力されるキー対応のコードの並びに基づき文頭の文字を判別する文頭判別手段132と、与えられる文字コードを大文字の文字コードに変換して出力する大文字変換手段133と、上記文頭判別手段132による判別結果に応じて出力する文字コー

ドを前記大文字変換手段133を介して出力するか又はそのまま出力するか切り換える切換手段134とを備える。また、中央制御部13Aには、管理手段131が備えられており、管理手段131は入力されるキー対応のコードを受け取り、所定のコードであるときには、これをそのまま或いは変換して蓄積し、所定のコード以外ときには、これを辞書検索部15へ送出して単語辞書14Eを用いた辞書引きによる候補の検索を行わせ、検索結果に係る候補文字又は候補文字列のコードを得る。次に、上記蓄積してあるコードと辞書検索部15による検索結果のコードとを順に並べて、切換手段134及び文頭判別手段132へ送出する。ここにおいて、上記の所定コードとは、スペースキー67、改行キー68及びピリオドが割り当てられた「1」キーの操作によるコードのことである。

【0104】文頭判別手段132は、管理手段131から与えられるコードの並びの中から、上記所定コードの内のスペースコード、改行コードを検出すると、その前方にある最初のコード（所定のコードを除く）がピリオドのコードとなっているか否かを検出する。そして、スペースコード、改行コードの前方にある最初のコード（所定のコードを除く）がピリオドのコードとなっている場合には、切換手段134へ指示を与え、1文字分のコードを大文字変換手段133へ送出させ、ピリオド以外のコードであれば、そのコードをそのまま出力させる。なお、当初、切換手段134は、最初の1文字のコードを大文字変換手段133へ送出させ、その後のコードをそのまま出力させており、文頭判別手段132の指示に応じて、当該1文字のコードを大文字変換手段133へ送出させ、その後コードをそのまま出力させるように働く。また、文頭判別手段132による切換指示のときに、先頭の文字コードが管理手段131から出力されるものとする。

【0105】具体的には、中央制御部13Aはコンピュータにより構成されているものであり、CPUが図69のフローチャートのプログラムに基づき、主メモリの大文字フラグのオンオフを制御し、これに基づきコードの変換を行っているので、これを説明する。装置の電源が投入されると、スタートとなり、主メモリの文字位置レジスタの値nを1にセットし（s201）、大文字フラグをオンとする（s202）。次に、キー入力結果が入力制御手段12から送られてくるのを待ち（s203）、キー入力の検出を行い（s204）、キー入力に応じてカーソルK（図42等）の移動を表示制御部17に指示し（s205）、大文字フラグをオフとする（s206）。以上の結果、最初にキー入力されたときには大文字フラグがセットされているから、当該文字の変換結果に係る文字のコードは大文字のコードとされ、次に入力される文字については、その時に大文字フラグがオフにされているから、その変換結果に係る文字コードは

そのまま出力される。

【0106】従って、図73に示されるように、「This is a pen. That is a book.」と結果が得られるように、入力を行ったときには、先頭の「T」が大文字とされ、これに続く「h」が小文字となる。更に、中央制御部13Aはキー入力結果が入力制御手段12から送られてくるのを待ち(s207)、キー入力の検出を行い(s208)、キー入力に応じてカーソルK(図42等)の移動を表示制御部17に指示し(s209)、このカーソルKからn(=1)字前の文字コードがスペースコード又は改行コードであるかを検出する(s210)。ここでは、「T」に続いて「his」と入力されるので、カーソルKの1文字前がスペースコードまたは改行コードとなることはなく、ステップs210にてn oへ分岐し、大文字フラグのオフが継続され(s217)、ステップs207からの動作が続けられる。上記の処理が続けられる内に、「This」の「s」の次に、スペースが入力されるから、ステップs210でyesへ分岐し、文字位置レジスタの値nが1インクリメントされ、「2」とされる(s211)。そして、カーソルKの2字前の文字コードがピリオドのコードであるかが検出される(s212)。上記の例では、「s」のコードでありピリオドではないので、ステップs213へと進み、カーソルKの2字前の文字コードがスペースのコードであるかが検出される(s213)。上記の例では、スペースコードでもない(「s」のコードである。)ので文字位置レジスタの値nを1に戻し(s216)、ステップs217からの動作が行われる。そして、以下同様に処理が進み、「That」の前のスペースが検出されたときには、ステップS210、S211、S212と進み、ここでyesへ分岐し、文字位置レジスタの値nを1に戻し(s214)、大文字フラグをオンとし(s215)、ステップs207以降の処理を続ける。この結果、「That」の「T」が大文字となる。なお、ステップs213にてyesへ分岐しステップs211へ戻る経路は、ピリオドの後に複数のスペースが入力された場合に対応する処理である。

【0107】以上のように、大文字フラグのオンオフが制御されるので、この大文字フラグのオンオフに基づき、表示制御部17に対する出力コードの変換が行われ、文の先頭文字が大文字に変換され出力される。上記の文字コードの変換においては、アルファベットの大字のコードと小文字のコードとが、図70に示されるように20H(Hはヘキサ表示)だけ異なるので、小文字コードから20Hを引けば大文字のコードを得ることができる。

【0108】上記の説明では、図67に示すが如きの複数のアルファベットが割り当てられた複数のキーを備える文字入力装置について説明したが、小文字コードを大文字コードに自動変換する機能はフルキーボードを有す

るタイプライタ等の文字入力装置に適用可能である。つまり、図71に示されるような全てのアルファベット1文字1文字が1つのキーに割り当てられているフルキーボード11Bを採用している文字入力装置では、通常のシフト状態では小文字の入力がなされ、シフトキーを操作しながら所望の文字キーを操作すると、この文字キー対応の大文字の入力を行うことができる。つまり、図73に示されるように、「This is a pen. That is a book.」との出力を得たいときには、図74に示されるように、「This」の「T」の入力のとき、「That」の「T」の入力のとき、それぞれシフトキーを操作しながら「T」の文字キーを操作する必要があり、操作が煩わしい。なお、図73～図76の「_」はスペースキーの入力を示している。

【0109】また、他のフルキーボードでは、「caps」キーが設けられており、大文字と小文字の切換えを行うように構成されている。この種のフルキーボードを用いた場合に、「This is a pen. That is a book.」との出力を得たいときには、図75に示されるように、「This」の「T」の入力の前後において、「That」の「T」の入力の前後において、「caps」キーを操作して入力を行う必要があり、やはり操作が煩わしい。

【0110】そこで、文字入力装置を図72に示す通りに構成する。つまり、図71に示したフルキーボード11Bを採用し、中央制御部13Bにより、小文字のコードを大文字に変更する。入力制御部12は文字キーに対応して文字コード(従って、通常のシフト状態では小文字の文字コード、シフトキーの操作と共に入力を行ったときには、大文字の文字コード)を発生し、管理手段131Bへ送出する。管理手段131Bは、辞書検索部15にコードを送ることなく蓄積し、文頭判別手段132による判別に同期して出力する。実際には、既に示した図69のフローチャートのプログラムにより動作を行い、大文字フラグのオンオフの制御を行い、これに基づき文字コードの変換を行う。これによって、図71に示したフルキーボード11Bを操作するに際しては、図76に示されるように、シフトキーの操作を全く行うことなく、通常のシフト状態で、「THIS IS A PEN. THAT IS A BOOK.」と入力すれば自動的に文章の先頭文字が大文字に変換されて出力され、従来のような複雑なキー操作から解放される利点がある。

【0111】

【発明の効果】以上説明したように本願の発明によれば、入力されたテンキーに対応する数字または入力された複数のキーに対応する数字列について、辞書手段を検索して候補文字または候補文字列が求められ、この候補文字または候補文字列が出力され、確定キーの操作に基づいて求められた候補文字または候補文字列の中から1つが確定されるので、少ないキー数のテンキーを用いて

入力した場合にも必要な候補文字または候補文字列を得ることができ、しかもこの候補から1つを確定でき適切な文字または文字列を得ることができる。

【手続補正 4】

【補正対象書類名】図面

【補正対象項目名】図 6 9

【補正方法】変更

【補正内容】

【図 6 9】

